MARYLAND
STATE RETIREMENT
and PENSION SYSTEM

Comprehensive Annual Financial Report

Maryland State Retirement and Pension System
A Pension Trust Fund of the State of Maryland
For the Years Ended June 30, 2019 and 2018

2019

MISSION STATEMENT

The Board of Trustees of the Maryland State Retirement and Pension System (System) is charged with the fiduciary responsibility for administering the survivor, disability and retirement benefits of the System's participants and to ensure that sufficient assets are available to fund the benefits when due. To accomplish this mission the System has established the following key goals:

- To prudently invest System assets in a well diversified manner to optimize long-term returns, while controlling risk though excellence in execution of the investment objectives and strategies of the System.

- To effectively communicate with all retirement plan participants to inform them about the benefits provided by the System, and to educate them about planning and preparing for all aspects of their future retirement.

- To accurately and timely pay retirement allowances provided by State pension law to the System's retirees and their beneficiaries.

- To implement an automated, comprehensive and integrated pension administration and electronic document management system.

- To efficiently collect the required employer and members contributions necessary to fund the System.

Comprehensive Annual Financial Report

Maryland State Retirement and Pension System

A Pension Trust Fund of the State of Maryland

For the Years Ended June 30, 2019 and 2018

Prepared by:
Maryland State Retirement Agency
120 East Baltimore Street
Baltimore, Maryland 21202

Introductory Section:

Financial Section:

Investment Section:

Actuarial Section:

Statistical Section:

Plan Summary Section:

STATE RETIREMENT AGENCY
120 East Baltimore Street
Baltimore, MD 21202-6700

MARYLAND
STATE RETIREMENT
and PENSION SYSTEM

410-625-5555 • 1-800-492-5909
TTY Users: call via Maryland Relay
sra.maryland.gov

December 15, 2019

Dear Members, Retirees and Beneficiaries:

On behalf of the Board of Trustees, we are pleased to present the Comprehensive Annual Financial Report of the Maryland State Retirement and Pension System for the fiscal year ended June 30, 2019. This report provides information on the financial status of the Retirement System during a period when the System issued approximately $332 million in average monthly payments to nearly 165,000 retirees and beneficiaries.

The Board's fundamental mission is to ensure that retirement benefits are paid in full, and in an accurate and timely manner. The Board oversees the investment of the Maryland State Retirement and Pension System assets in order to ensure the funding necessary to meet those obligations.

The pension fund realized modest gains in fiscal 2019, earning 6.46 percent for the year, falling short of the plan's 7.45 percent assumed actuarial return rate. Even so, the fund's performance raised the assets of the System to $54.2 billion, an increase of $2.3 billion over the previous fiscal year.

While the focus will typically be on investment returns, the Board recognizes that the management of risk is equally important in the investment of plan assets. History has shown that returns will vary from year to year, at times by wide margins. The Board has adopted investment policies designed to minimize the downside impact of such volatility on the value of System assets, while still capturing significant value when markets are strong.

Reforms enacted by the Maryland General Assembly in 2011 and in subsequent years continue to show positive results for the System and, in fact, continue to exceed earlier projections. Required employer contributions for the coming fiscal year of 2021 are projected to be 17.75% of payroll, significantly lower than the 19.35% predicted at the time of the 2011 reforms. As of June 30, 2019, the System's funded ratio is 72.9%, higher than the 71.7% predicted at the same time. The System is on track to be 80% funded by 2026; 85% funded by 2030; and 100% funded by 2039.

Your Retirement System remains administratively and financially sound. As a participant in the System, you can remain confident that your pension benefits are secure. As always, your commitment to and involvement in the concerns of the System are greatly appreciated. We value your input—this is your System. If you have any questions, please do not hesitate to contact us.

Sincerely,

Nancy K. Kopp

NANCY K. KOPP
Chairman

Peter Franchot

PETER FRANCHOT
Vice Chairman

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LETTER OF TRANSMITTAL

December 15, 2019

We are pleased to submit the Comprehensive Annual Financial Report for the Maryland State Retirement and Pension System for the fiscal year ended June 30, 2019. We believe this report fairly presents the operating results achieved during this 12-month reporting period.

The System is responsible for properly administering retirement, disability, and death benefits. At the same time, it strives to keep employer contribution rates as reasonable as possible by maximizing investment returns while maintaining an acceptable level of risk. Members covered by the plans include state employees, teachers, law enforcement officers, legislators, judges, as well as local government employees and correctional personnel whose employers have elected to participate in the System.

The System currently provides monthly allowances to nearly 165,000 retirees and beneficiaries, and is an essential element of the future financial security for more than 193,000 active participating members. Descriptions of the membership requirements and benefits provided by each plan administered by the System are included in the Plan Summary Section starting on page 136.

This Comprehensive Annual Financial Report contains six sections. The Introductory Section provides information about the administrative structure of the System. The Financial Section provides a comprehensive review of the System's financial position, the results of its operations and its funded status. It also contains the report from the System's independent auditor, the combined financial statements and supplementary financial data. The Investment Section includes a report highlighting the System's investment performance in addition to various summary level portfolio compositions and other investment data. The Actuarial Section contains the independent actuary's report on the results of the System's annual actuarial valuation. The Statistical and Plan Summary Sections provide demographic composition of the System's membership segments affected by each plan and detailed descriptions of the various plans' provisions. In addition to this Letter of Transmittal, additional narrative, overview, and analysis can be found in Management's Discussion and Analysis beginning on page 18.

INVESTMENTS

The System's investment portfolio returned 6.46 percent (money-weighted net of fees) on investments for the fiscal year 2019—falling short of the 7.45 percent assumed actuarial return rate and the plan's policy benchmark of 7.09 percent. After the payment of benefits, the market value of invested assets increased by roughly $2.3 billion from $51.9 billion on June 30, 2018 to $54.2 billion on June 30, 2019.

The System's long-term target asset allocation is comprised of 37 percent public equities, 19 percent rate sensitive assets, 13 percent private equities, 9 percent credit/debt strategies, 14 percent real assets, and 8 percent absolute return. The System's portfolio is balanced across several asset and sub-asset classes and is globally diversified. This, coupled with a long term investment horizon, provides the System with greater protection during short-term market volatility.

FINANCIAL INFORMATION

System management has committed the resources necessary to maintain an internal control structure that provides reasonable assurance that assets are adequately safeguarded, financial records are consistently and accurately maintained, and transactions are properly executed to permit preparation of financial statements in accordance with generally accepted accounting principles. The System's internal control structure includes written policies and procedures and an internal audit division that reports to the Board.

ACCOUNTING SYSTEM AND REPORTS

The System reports its transactions on the accrual basis of accounting. Under this method, revenues are reported in the accounting period they are earned and become measurable, and expenses are reported when the related liability is incurred and measurable. Investments are reported at fair value at fiscal year-end. Investment purchases and sales are reported in the accounting period in which the related trade dates occur.

REVENUES

The reserves necessary to finance retirement allowances and other benefits are accumulated through investment earnings and the collection of employer and member contributions. During fiscal year 2019, investment earnings were $3.6 billion, while revenues from employer and member contributions were $2.05 billion and $807.3 million, respectively. For fiscal year 2019, member contribution rates on average were 7 percent, while employer rates varied depending on the System.

EXPENSES

The System's expenses consist of monthly retirement allowances, refunds of contributions to terminated and transferring members, withdrawing employers, and the administrative cost of System operations. Payments to retirees, beneficiaries and transferring or withdrawing members and employers continued to be the System's primary disbursements during FY2019, totaling $4.0 billion. In addition, the System disbursed $409.9 million to manage the investment portfolio and to administer the System, of which $370.1 million was paid for investment management and $39.8 million was used to fund the System's administrative operations.

FUNDING

Funds are derived from the excess of additions, which include contributions and investment earnings, over deductions, which are comprised of benefits and administrative expenses. Funds are accumulated to meet future benefit obligations to retirees and beneficiaries. This accumulated balance is referred to as the "net assets held in trust for pension benefits" in the Statement of Plan Net Position in the Financial Section of this report. The Net Pension Liabilitiy (NPL) is not disclosed in the basic financial statement but is disclosed in note nine to the basic financial statements. The funded status schedule presented in Other Supplemental Information shows the actuarial value of assets, which is based on a five-year smoothed expected rate of return, wherein the excess or shortfall of investment income over or under the actuarial assumed income of 7.45 percent is recognized over a five-year period. This is the value of assets used by the actuary in determining contribution rates for the Systems as disclosed in note five to the basic financial statements.

The actuarial accrued liability of the Systems is also determined by the actuary. It is a measure of the present value of actuarial accrued liabilities estimated to be payable in the future to current retirees, beneficiaries and employees for service earned to date. The percentage computed by dividing the actuarial value of net assets available for benefits by the actuarial accrued liability is generally referred to as the "funded ratio." This ratio provides an indication of the funded status of the System on a going-concern basis and generally, the greater this percentage, the stronger the System. The System's funded ratio increased from 72.5 percent at June 30, 2018 to 72.9 percent at June 30, 2019.

At June 30, 2019, the System's actuarial accrued assets and liability were $54.4 billion and $74.5 billion, respectively. The unfunded actuarial accrued liability totaled $20.1 billion, resulting in a funded status ratio of 72.9 percent. The unfunded actuarial accrued liability is being amortized over a closed 25-year period.

PROFESSIONAL SERVICES

The System contracts for the services of various independent consulting, investment advisory and financial professionals to assist the Board of Trustees in carrying out its fiduciary responsibility to efficiently and effectively manage the System. Actuarial services were provided by Gabriel Roeder Smith & Company and independent financial statement audit services were provided by SB & Company, LLC. The System's asset custody and portfolio accounting services were provided by the State Street Bank & Trust Company under a multi-year, master custody arrangement. Meketa Investment Group, Inc. served as the System's general investment consultant. Specialty consulting services were provided by Mercer Investments, LLC for private equity and Townsend Holdings, LLC for real estate. Aksia, LLC advises staff on the retirement System's Absolute Return portfolio. A complete listing of the System's professional consultants and external investment advisors is presented on page 11.

AWARDS

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Maryland State Retirement and Pension System for its Comprehensive Annual Financial Report for the fiscal year ended June 30, 2018. This was the thirtieth consecutive year (1989 through 2018) that it has received this prestigious award. In order to be awarded a Certificate of Achievement, a governmental unit must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

Additionally, the Maryland State Retirement and Pension System received the Public Pension Coordinating Council's (PPCC) 2019 Recognition Award for meeting professional standards for plan funding and administration, as set forth in the Public Pension Standards.

The PPCC is a coalition of associations that represent public pension funds that cover the vast majority of public employees in the U.S., including the National Association of State Retirement Administrators (NASRA), the National Council on Teacher Retirement (NCTR), and the National Conference on Public Employee Retirement Systems (NCPERS).

The Public Pension Standards are intended to reflect expectations for public retirement Systems management and administration, and serve as a benchmark by which all defined benefit public plans should be measured. The Maryland State Retirement and Pension System is proud to be a recipient of this award.

ACKNOWLEDGMENTS

This annual report reflects the dedicated efforts of the System's staff under the steady direction of the Board of Trustees. We extend our sincere gratitude to each member of the Board, the System's staff, the Board's advisors and the many people who worked with diligence and dedication throughout fiscal year 2019. Special thanks go to the members of the Maryland State Retirement Agency's senior executive team and the agency's staff of professional and para-professionals who helped to gather and prepare the information for this report.

R. Dean Kenderdine	Melody Countess, CPA, CGMA
Executive Director	*Chief Operating Officer*
Secretary to the Board	

BOARD OF TRUSTEES

NANCY K. KOPP, *Chairman*
State Treasurer
Ex Officio since February 14, 2002
Member, Administrative Committee
Member, Corporate Governance Committee
Member, Investment Committee

PETER FRANCHOT, *Vice Chairman*
State Comptroller
Ex Officio since January 22, 2007
Member, Investment Committee

DAVID R. BRINKLEY
Ex Officio since January 21, 2015
Member, Administrative Committee
Member, Corporate Governance Committee
Member, Investment Committee

ERIC D. BROTMAN
January 19, 2016 – June 30, 2023
Member, Investment Committee

JAMAAL R. A. CRADDOCK
June 19, 2018 - July 31, 2021
Member, Audit and Securities Litigation Committee
Member, Investment Committee

KENNETH B. HAINES
August 1, 2019 - July 31, 2023
Vice Chairman, Administrative Committee
Member, Investment Committee

DAVID B. HAMILTON
August 5, 2016 - July 31, 2020
Chairman, Audit and Securities Litigation Committee
Member, Investment Committee

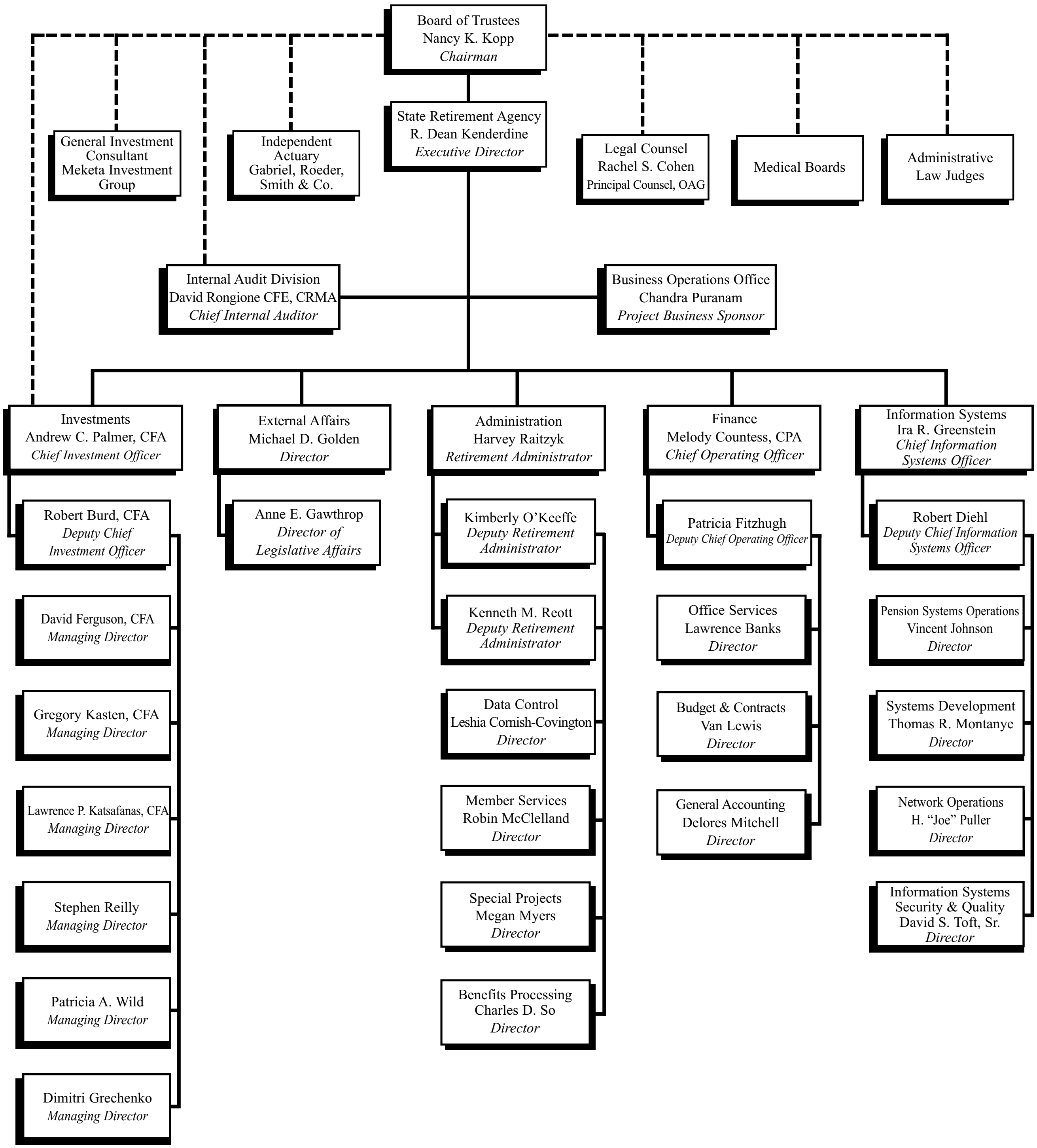
LINDA A. HERMAN
August 1, 2013 - June 30, 2023
Vice Chairman, Investment Committee

BOARD OF TRUSTEES

ADVISORS TO THE INVESTMENT COMMITTEE

ORGANIZATIONAL CHART

(November 2019)



*Additional information regarding investment professionals who provide services to the System can be found on pages 11, and 88-89.

PROFESSIONAL SERVICES

Global Custodial Bank and Security Lending

State Street Bank & Trust Company
Boston, Massachusetts

Hearing Officers

Office of Administrative Hearings
Baltimore, Maryland

Independent Actuary

GRS Retirement Consulting
Southfield, Michigan

Independent Public Accountant

SB & Company, LLC
Owings Mills, Maryland

Independent Investment Consultants

Mercer Investments, LLC
Boston, Massachusetts

Meketa Investment Group, Inc.
Westwood, Massachusetts

Townsend Holdings, LLC
Cleveland, Ohio

Aksia, LLC
New York, New York

Operational Banking Services

M & T Bank
Baltimore, Maryland

The Harbor Bank of Maryland
Baltimore, Maryland

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Maryland State

Retirement and Pension System

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

June 30, 2018

Christopher P. Morrill

Executive Director/CEO

Public Pension Coordinating Council

Public Pension Standards Award For Funding and Administration 2019

Presented to

Maryland State Retirement and Pension System

In recognition of meeting professional standards for
plan funding and administration as
set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

Alan H. Winkle
Program Administrator

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SRPS Financial Section

SB & COMPANY, LLC
KNOWLEDGE • QUALITY • CLIENT SERVICE

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	**6,149.6**	6,685.9	(536.3)	-8.0%
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	**4,033.4**	3,845.9	187.5	4.9%
Net increase in plan net position	**$2,116.2**	$2,840.0	$(723.8)	-25.5%

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	**$20,625.6**	$20,981.6	$(356.0)	-1.7%
Ratio - Fiduciary Net Position/TPL	72.3%	71.2%		

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)	**$1,639,447**	$1,252,466
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	**1,670,973**	1,006,317
Total receivables	**1,956,844**	1,194,962
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	**4,483,334**	2,043,411
Total investments	**56,996,121**	52,617,108
Total Assets	**60,592,412**	55,064,536
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	**4,483,334**	2,043,411
Total Liabilities	**6,648,992**	3,237,303
NET POSITION RESTRICTED FOR PENSION BENEFITS	**$53,943,420**	$51,827,233

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	**2,861,382**	2,786,600
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	**3,645,275**	4,261,940
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	**13,060**	9,457
Total investment income	**3,658,335**	4,271,397
Investment expenses	**(370,126)**	(372,004)
Net investment income	**3,288,209**	3,899,393
TOTAL ADDITIONS	**6,149,591**	6,685,993
DEDUCTIONS:		
Benefit payments	**3,926,220**	3,744,132
Refunds	**67,400**	68,600
Administrative expenses	**39,784**	33,211
TOTAL DEDUCTIONS	**4,033,404**	3,845,943
Net increase in plan position	**2,116,187**	2,840,050
Net position restricted for pension benefits		
Beginning of the fiscal year	**51,827,233**	48,987,183
END OF THE FISCAL YEAR	**$53,943,420**	$51,827,233

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 $21,724,997and $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:

		As of June 30, 2019	
Type	**Description**	**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, know 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 Fundss 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:

		As of June 30, 2019			
	Fair Value	**Investment Maturities (in years)**			
Investment Type:	**(in thousands)**	**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**

		As of June 30, 2018			
	Fair Value	Investment Maturities (in years)			
Investment Type:	**(in thousands)**	**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%
	$9,240,294		$9,326,346	

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
(U.S. Dollars in Thousands)

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	$9,451,776	$698,789	$91,582	$2,333,235	$12,575,382

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	**$9,455,474**	**$1,530,117**	**$164,442**	**$1,576,359**	**$12,726,392**

(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 Depository Receipts and international obligations valued in U.S. dollars but classified as International. Mutual Funds listed have exposure to multiple currencies, however, are valued in U.S. dollars.

G. Security Lending Transactions

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

The following table details the net income from securities lending for the years ended June 30, 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	**$ 13,060**	$ 9,457

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):

	As of June 30, 2019		
Securities Lent	**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	**$4,405,523**	**$4,483,334**	**101.8%**

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

Securities Lent	As of June 30, 2018 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	**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	$ 6,441	$ 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	13,477	6,441	5,378	1,658
Equity Securities				
Domestic stocks (includes REITs)	9,766	9,766		
International stocks (includes (REITs)	9,957	9,957		
Total equity securities	19,723	19,723		
Alternative Investment	32	32		
Cash and Cash Equivalents	1,627	1,627	-	-
Total investment by fair value level	$ 34,859	$27,823	$5,378	$1,658
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			
Mult-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	$ 19,266			
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	$ 27	$ -	$ 27	$ -
Total	$ 54,152			

As of June 30, 2018 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	$ 6,585	$ 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	12,938	6,585	4,825	1,528
Equity Securities				
Domestic stocks (includes REITs)	9,455	9,455		
International stocks (includes (REITs)	10,173	10,173		
Total equity securities	19,628	19,628		
Alternative Investment	51	51		
Cash and Cash Equivalents	1,185	1,185	-	-
Total investment by fair value level	$ 33,802	$ 27,449	$ 4,825	$ 1,528
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			
Mult-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	$ 17,871			
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	$ 152	$ -	$ 152	$ -
Total	$ 51,825			

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
	$19,266	$9,836			$17,871	$7,805		

(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)

	Changes in Fair Value(4)		Fair Value at June 30,2019		
Currency	**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)

	Changes in Fair Value(4)		Fair Value at June 30,2018		
Currency	**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

Fair Value	S&P Rating	Fair Value	Moody's Rating	Fair Value	Fitch 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

Fair Value	S&P Rating	Fair Value	Moody's Rating	Fair Value	Fitch 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	$ **63,403**	$ 60,407

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	**20,625,610**	$20,981,600
Ratio - Fiduciary Net Position/TPL	**72.34%**	71.18%

A. Actuarial Assumptions

The actuarial assumptions presented below for 2019 were adopted pursuant to an expereince 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:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
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)

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System	1% Decrease to 6.40%	Discount Rate 7.40%	1% Increase to 8.40%
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	573,026	1,089,749	14,813
Total pension liability, beginning of year	42,916,205	25,530,054	2,269,293
Total pension liability, end of year (a)	$ 43,489,231	$ 26,619,803	$ 2,284,106
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	1,322,474	642,461	63,780
Plan fiduciary net position - beginning of year	31,480,452	17,452,939	1,446,548
Plan fiduciary net position - end of year (b)	$ 32,802,926	$ 18,095,400	$ 1,510,328
Employer net pension liability (a) - (b)	$ 10,686,305	$ 8,524,403	$ 773,778

**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)
1,328	81,281	1,760,197
561,930	1,531,351	72,808,833
$ 563,258	$1,612,632	$74,569,030
$ 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
$ 490,017	$1,044,749	$53,943,420
$ 73,241	$ 567,883	$20,625,610

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	1,282,929	735,759	72,364
Total pension liability, beginning of year	41,633,276	24,794,295	2,196,929
Total pension liability, end of year (a)	$ 42,916,205	$ 25,530,54	$ 2,269,293
Plan fiduciary net position			
Contributions - employer	$ 1,122,986	$ 707,194	$ 80,241
Contributions - members	484,923	283,670	8,063
Net investment income	2,364,521	1,318,438	109,405
Benefit payments, including refunds and administrative expenses	(2,223,399)	(1,395,375)	(122,963)
Net Transfer	229	(1,653)	21
Net Change in Plan Fiduciary Net Position	1,749,260	912,274	74,767
Plan fiduciary net position - beginning of year	29,731,192	16,540,665	1,371,781
Plan fiduciary net position - end of year (b)	$ 31,480,452	$ 17,452,939	$ 1,446,548
Employer net pension liability (a) - (b)	$ 11,435,753	$ 8,077,115	$ 822,745

**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)
12,092	94,804	2,197,948
549,838	1,436,547	70,610,885
$ 561,930	$ 1,531,351	$ 72,808,833
$ 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
$ 470,019	$ 977,275	$ 51,827,233
$ 91,911	$ 554,076	$ 20,981,600

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	1,099,855	447,490	30,011
Total pension liability, beginning of year	40,533,421	24,346,805	2,166,918
Total pension liability, end of year (a)	$ 41,633,276	$ 24,794,295	$ 2,196,929
Plan fiduciary net position			
Contributions - employer	$ 1,137,472	$ 730,506	$ 83,000
Contributions - members	477,194	282,742	7,996
Net investment income	2,710,602	1,516,095	125,128
Benefit payments, including refunds and administrative expenses	(2,136,132)	(1,319,014)	(118,531)
Net Transfer	(157)	(1,117)	56
Net Change in Plan Fiduciary Net Position	2,188,979	1,209,212	97,649
Plan fiduciary net position - beginning of year	27,542,213	15,331,453	1,274,132
Plan fiduciary net position - end of year (b)	$ 29,731,192	$ 16,540,665	$ 1,371,781
Employer net pension liability (a) - (b)	$ 11,902,084	$ 8,253,630	$ 825,148

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

AND PENSION SYSTEM

EMPLOYERS' NET PENSION LIABILITY

June 30, 2017

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)
13,520	60,056	1,650,932
536,318	1,376,491	68,959,953
$ 549,838	$ 1,436,547	$ 70,610,885
$ 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	-
33,689	91,729	3,621,258
407,662	810,466	45,365,926
$ 441,351	$ 902,195	$ 48,987,184
$ 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	1,294,382	938,326	55,812
Total pension liability, beginning of year	39,239,039	23,408,479	2,111,106
Total pension liability, end of year (a)	$ 40,533,421	$ 24,346,805	$ 2,166,918
Plan fiduciary net position			
Contributions - employer	$ 1,084,049	$ 640,943	$ 72,320
Contributions - members	464,470	278,944	7,251
Net investment income	301,774	168,775	13,806
Benefit payments, including refunds and administrative expenses	(2,071,845)	(1,267,809)	(122,123)
Net Transfer	(163)	(191)	41
Net Change in Plan Fiduciary Net Position	(221,715)	(179,338)	(28,705)
Plan fiduciary net position - beginning of year	27,763,928	15,510,791	1,302,837
Plan fiduciary net position - end of year (b)	$ 27,542,213	$ 15,331,453	$ 1,274,132
Employer net pension liability (a) - (b)	$ 12,991,208	$ 9,015,352	$ 892,786

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

AND PENSION SYSTEM

EMPLOYERS' NET PENSION LIABILITY

June 30, 2016

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)
27,717	72,164	2,388,401
508,601	1,304,327	66,571,552
$ 536,318	$ 1,376,491	$68,959,953
$ 18,384	$ 54,959	$ 1,870,655
2,863	10,886	764,414
4,415	8,761	497,531
(30,532)	(64,205)	(3,556,514)
-	313	-
(4,870)	10,714	(423,914)
412,532	799,752	45,789,840
$ 407,662	$ 810,466	$45,365,926
$ 128,656	$ 566,025	$23,594,027

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	1,914,103	1,310,831	134,768
Total pension liability, beginning of year	37,324,936	22,097,648	1,976,338
Total pension liability, end of year (a)	$ 39,239,039	$ 23,408,479	$ 2,111,106
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	309	(535)	-
Net Change in Plan Fiduciary Net Position	272,873	145,777	(3,710)
Plan fiduciary net position - beginning of year	27,491,055	15,365,014	1,306,547
Plan fiduciary net position - end of year (b)	$ 27,763,928	$ 15,510,791	$ 1,302,837
Employer net pension liability (a) - (b)	$ 11,475,111	$ 7,897,688	$ 808,269

**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)
48,371	76,760	3,484,833
460,230	1,227,567	63,086,719
$ 508,601	$ 1,304,327	$ 66,571,552
$ 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	-
3,649	31,031	449,852
408,883	768,489	45,339,988
$ 412,532	$ 799,752	$ 45,789,840
$ 96,069	$ 504,575	$ 20,781,712

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	1,794,495	1,032,489	93,837
Total pension liability, beginning of year	35,530,441	21,065,159	1,882,501
Total pension liability, end of year (a)	$ 37,324,936	$ 22,097,648	$ 1,976,338
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	3,021,430	1,678,140	117,984
Plan fiduciary net position - beginning of year	24,469,625	13,686,874	1,188,563
Plan fiduciary net position - end of year (b)	$ 27,491,055	$ 15,365,014	$ 1,306,547
Employer net pension liability (a) - (b)	$ 9,833,881	$ 6,732,634	$ 669,791

**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)
21,394	84,413	3,026,628
438,836	1,143,154	60,060,091
$ 460,230	$ 1,227,567	$ 63,086,719
$ 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)
-	227	-
46,551	112,666	4,976,771
362,332	655,823	40,363,217
$ 408,883	$ 768,489	$ 45,339,988
$ 51,347	$ 459,078	$ 17,746,731

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	$10,686,305	$8,524,403	$773,778	$73,241	$567,883	$20,625,610
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	$ 11,435,753	$ 8,077,115	$ 822,745	$ 91,911	$ 554,076	$ 20,981,600
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	$ 11,902,084	$ 8,253,630	$ 825,148	$ 108,487	$ 534,352	$ 21,623,701
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	$ 12,991,208	$ 9,015,352	$ 892,786	$ 128,656	$566,025	$ 23,594,027
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	$ 11,475,111	$ 7,897,688	$ 808,269	$ 96,069	$ 504,575	$ 20,781,712
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	$ 9,833,881	$ 6,732,634	$ 669,791	$ 51,347	$ 459,078	$ 17,746,731
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	Totals 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	6,548	6,328
Total personnel services	20,381	19,915
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	12,290	8,153
Miscellaneous		
Communications	867	740
Rent	1,686	1,737
Equipment and supplies	1,091	772
Other	3,469	1,894
Total miscellaneous	7,113	5,143
Total Administrative Expenses	$ 39,784	$33,211

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	**323,356**	**36,746**	**360,102**
Other investment service fees			
Currency overlay	**4,672**	**-**	**4,672**
Other investment expenses	**5,352**	**-**	**5,352**
Total other investment service fees	**10,024**	**-**	**10,024**
Total Investment Expenses	**$333,380**	**$36,746**	**$370,126**

	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	321,042	41,420	362,462
Other investment service fees			
Currency overlay	5,275	-	5,275
Other investment expenses	4,267	-	4,267
Total other investment service fees	9,542	-	9,542
Total Investment Expenses	$ 330,584	$ 41,420	$ 372,004

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	1,222,780	717,115	55,577
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	34,686,875	19,111,722	1,589,787
Total assets	36,885,383	20,390,977	1,696,105
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	4,082,456	2,295,577	185,777
Net position restricted for pensions	$32,802,927	$18,095,400	$1,510,328

** 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)	-
17,297	40,109	2,052,878	(96,034)	1,956,844
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
40,278	82,469	4,483,334	-	4,483,334
513,757	1,093,980	56,996,121	-	56,996,121
549,811	1,166,170	60,688,446	(96,034)	60,592,412
				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
2	-	96,034	(96,034)	-
59,793	121,423	6,745,026	(96,034)	6,648,992
$ 490,018	$ 1,044,747	$ 53,943,420	$ -	$ 53,943,420

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	1,638,282	1,025,634	94,751
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	2,216,078	1,224,118	101,768
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	7,929	4,398	365
Total Investment Income	2,224,007	1,228,516	102,133
Less investment expenses:			
Investment advisory fees	(224,746)	(124,589)	(10,355)
Net investment income	1,999,261	1,103,927	91,778
Transfers from other systems	-	-	-
Total Additions	3,637,543	2,129,561	186,529
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	2,315,069	1,487,100	122,749
Net (decrease) increase in plan assets	1,322,474	642,461	63,780
Net position restricted for pensions			
Beginning of the fiscal year	31,480,453	17,452,939	1,446,548
End of the Fiscal Year	$32,802,927	$18,095,400	$1,510,328

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

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Investment Section

CHIEF INVESTMENT OFFICER'S REPORT

INVESTMENT OVERVIEW

The Maryland State Retirement and Pension System returned 6.46 percent net of fees in fiscal year 2019, relative to the actuarial return target of 7.45 percent, and 7.09 percent for its policy benchmark. After the payment of benefits, the market value of assets increased by approximately $2.2 billion, from $52.0 billion on June 30, 2018 to $54.2 billion on June 30, 2019.

While all major asset classes achieved positive returns, the performance was not evenly distributed. The private equity and rate sensitive categories generated the best returns for the year, producing 13.7 percent and 9.4 percent, respectively. At the other end of the spectrum, absolute return and developed foreign stocks generated returns of 3.0 percent and 0.4 percent, respectively.

The Board's asset allocation policy is designed to achieve the actuarial rate of return over long periods of time by assembling a diversified portfolio of asset classes, each of which may have a large or small, positive or negative return in any given year. By assembling assets that exhibit distinct risk and return characteristics in different market environments, the Board expects more stable investment returns over time than a less diversified portfolio. This lower risk portfolio should result in a larger asset pool for the System's beneficiaries than a more volatile portfolio with the same average return. Understanding the Board's principles of asset allocation is important in evaluating the performance in any one-year period. While the realized return of 6.46 percent for fiscal year 2019 is below the Board's long-term expectation for the portfolio, it is well within its expected ranges for annual variations.

The System's asset allocation is organized into five broad categories: Growth/Equity, Rate Sensitive, Credit, Real Assets, and Absolute Return. During the fiscal year, the asset allocation remained unchanged from the prior year, as the long-term return expectations and risk profile of the portfolio remained consistent with the Board's objectives.

The Growth/Equity portfolio is comprised of public equity and private equity. Within public equity, there are dedicated allocations to U.S., international developed, and emerging markets. The objective of this asset class is to generate high returns associated with the economic growth underlying global economies.

The Rate Sensitive category consists of exposure to core, or investment-grade, bonds. This asset class is designed to provide protection against downturns in the equity market by offering a reliable income stream through the yield component. This yield also provides some protection against a deflationary environment, characterized by falling interest rates. This asset class includes long-term U.S. Treasury bonds, Treasury inflation protected securities, corporate bonds and securitized debt.

The purpose of the Credit asset class is to take advantage of the potential higher returns offered by below investment-grade bonds. The return objective is similar to public equity, with a lower risk profile. This category includes high yield bonds, bank loans, emerging markets debt, distressed debt, mezzanine debt, and other credit-focused investments.

Real Assets includes real estate, natural resources and infrastructure investments. A significant portion of the assets in this category provides a regular income stream. Due to the tangible, or real, element of this asset class, it is expected to provide some level of protection against an inflationary environment, as well as additional diversification to the total portfolio.

The objective of the Absolute Return asset class is to achieve a return that falls between the expectations for public equity and bonds, with low correlation to other asset classes. The risk profile of this asset class is expected to be significantly lower than public equity, which should provide protection during periods of stock market decline. Strategies in this asset class include event-driven, global macro, and relative value hedge funds, as well as insurance-related products.

INVESTMENT POLICY AND OBJECTIVES

The Board of Trustees is charged with the responsibility of managing the assets of the System. In doing so, the Board is required to exercise its fiduciary duties solely in the interest of the participants with the care, skill, and diligence that a prudent person would exercise under similar circumstances. This standard of care encourages diversifying investments across various asset classes.

Investment objectives are designed to support the fulfillment of the Board's mission to optimize risk-adjusted returns to ensure that sufficient assets are available to pay benefits to members and beneficiaries when due. As a long-term investor, the Board understands that short-term market returns will fluctuate.

These investment objectives are implemented in accordance with investment policies developed by the Board. The "prudent person standard", as outlined in both the Maryland Annotated Code and the Board's investment policies, allows the Board to set investment policies and delegate authority to investment professionals employing active and passive strategies. Firms retained generally have a demonstrated performance record and a clearly defined and consistently applied investment process.

The Board manages the assets for the System with the goal of achieving an annualized investment return that over a long-term time frame: (1) meets or exceeds the investment policy benchmark for the System; (2) in nominal terms, equals or exceeds the actuarial investment return assumption adopted by the Board; and (3) in real terms, exceeds the U.S. inflation rate by at least 3 percent. A more detailed discussion of each of these goals follows below.

1. **Meeting or exceeding the Investment Policy Benchmark for the System**. The Investment Policy Benchmark is calculated by using a weighted average of the Board-established benchmarks for each asset class. This benchmark enables the comparison of the actual performance of the System to a proxy portfolio, and provides a measure of the contribution of policy implementation and active management to overall fund returns.

2. **In nominal terms, equaling or exceeding the actuarial investment return assumption of the System.** The Board adopts the actuarial rate of interest, which was set at 7.45 percent for fiscal year 2019. The actuarial investment return assumption functions as an estimate of the long-term rate of growth of the assets for the System. In adopting an actuarial return assumption, the Board anticipates that the investment portfolio will achieve higher or lower returns each year but will trend toward 7.45 percent over time.

3. **In real terms, exceeding the U.S. inflation rate by at least 3 percent**. The inflation related objective compares the investment performance against a rate of inflation measured by the Consumer Price Index (CPI) plus 3 percent. The inflation measure provides a link to the liabilities of the System, which have an embedded sensitivity to changes in the inflation rate.

The Board is also responsible for establishing the asset allocation policy for the System. It does this by weighing three liability-oriented objectives when making asset allocation determinations. These objectives include:

1. achieving and maintaining a fully funded pension plan;
2. minimizing contribution volatility year to year; and
3. realizing surplus assets.

Asset allocation policy targets are determined by recognizing that liabilities (future benefit payments to the participants and beneficiaries of the System) must be paid in full and on time. The mix of asset classes is chosen to provide sufficient growth to meet the long-term return objective of the System, while providing sufficient diversification to moderate the volatility of that return. For example, a portfolio of equities will likely provide the required return over a long time horizon, but will subject the market value of the portfolio to unacceptable levels of volatility such that the goals of minimizing contribution volatility and realizing surplus assets would be difficult to achieve. Combining other asset classes with equities will provide differentiated return sources, reduce the volatility of returns and help realize those liability-oriented objectives.

The Board's long-term asset class targets and ranges as of June 30, 2019 are shown below.

ASSET CLASS	LONG-TERM POLICY TARGET	RANGE
Growth Equity	**50%**	**+/-7%**
U.S Equity	16%	
International Developed Equity	10%	
Emerging Markets Equity	11%	
Private Equity	13%	
Rate Sensitive	**19%**	**+/- 5%**
Long-term Government Bonds	10%	
MBS/Corporate Bonds	5%	
TIPS	4%	
Credit	**9%**	**+/- 4%**
High Yield Bonds/Bank Loans	7%	
Emerging Market Debt	2%	
Real Assets	**14%**	**+/- 4%**
Real Estate	10%	
Natural Resources/Infrastructure	4%	
Absolute Return	**8%**	**+/- 4%**
Total Assets	**100%**	

INVESTMENT PERFORMANCE

Investment performance is calculated using time-weighted rates of total return, including the impact of fees and expenses. Total return includes interest and dividends, as well as capital appreciation.

The investment program realized a return of 6.5 percent for fiscal year 2019. Annualized returns for the 3-, 5-, 10-, 20- and 25-year periods ending June 30, 2019 were 8.2 percent, 5.6 percent, 8.6 percent, 5.3 percent and 6.9 percent, respectively.

	FY 2019 SRPS Performance	FY 2019 Benchmark Performance	SRPS Exposure June 30, 2019
Public Equity	3.9%		36.4%
Custom Benchmark		10.6%	
U.S. Equity	8.2%		12.3%
Russell 3000		9.0%	
International Equity	0.4%		7.2%
MSCI World ex U.S.		1.3%	
Emerging Markets Equity	3.3%		9.4%
MSCI Emerging Markets		8.2%	
Global Equity	1.8%		7.5%
MSCI AC World Index		5.7%	
Private Equity	13.7%		14.0%
Custom State Street PE		10.9%	
Rate Sensitive	9.4%		18.2%
Custom Benchmark		9.8%	
BC U.S. Gov't Long Index		12.3%	
BC U.S. TIPS Index		4.9%	
Credit/Debt Strategies	6.5%		8.9%
Custom Benchmark		7.3%	
BC High Yield		7.5%	
S&P LSTA Leveraged Loan		4.0%	
JP Morgan GBI EM GD		9.0%	
JP Morgan EMBI GD		12.5%	
JP Morgan CEMBI Broad		10.7%	
Real Assets	5.3%		13.3%
Custom Benchmark		6.2%	
Absolute Return	3.0%		7.4%
Custom Benchmark		3.1%	
Multi-Asset	4.4%		1.3%
Custom Benchmark		7.1%	
Cash	2.3%		0.5%
Custom Benchmark		2.3%	
TOTAL FUND	**6.5%**	**7.1%**	**100%**

The allocation as of June 30, 2019 reflects the ranges and transitional targets of the System as described in the previous section.

ECONOMIC AND CAPITAL MARKET OVERVIEW

For fiscal year 2019, the System produced its tenth consecutive year of positive performance, as the length of the bull market in U.S. stocks achieved record status. While stocks of large companies located in the U.S., as represented by the S&P 500, achieved returns in excess of 10% for the fiscal year, the path of the return was marked by extreme volatility. In fact, fiscal 2019 can be characterized as a tale of two distinct economic regimes. During the first half of the fiscal year, the Federal Reserve continued with the rate tightening cycle that began in December 2015 by hiking twice, in September and December. This rising rate environment, coupled with the escalating trade tensions with China and concerns over the implication of an inverted yield curve, sparked investor fear of a global economic slowdown. As a result of this uncertainty, the S&P 500 plummeted by over 13% in the fourth quarter of 2018, ending the first half of the fiscal year down by almost 7%.

The beginning of calendar year 2019 saw a complete reversal for U.S. stocks, as the Federal Reserve pivoted its course and signaled a potential pause to the rising interest rate cycle that began in late 2015. This turnaround in policy was in response to the slowing of the Chinese economy, and the negative implications the escalating trade tensions with China would have on the global economy. The markets cheered this policy change and began to anticipate rate cuts by the Federal Reserve in an effort to extend the current economic expansion. The focus turned to the positive factors propelling the U.S. economy, namely strong gross domestic product readings, historically low unemployment rates below 4%, and benign inflation slightly below the target rate of 2%. These favorable conditions pushed U.S. equities higher in the second half of the fiscal year, with the S&P 500 rising more than 18%, erasing the negative returns produced in the first half of the fiscal year.

Fiscal year 2019 was somewhat unusual in that diversification in public stocks hurt investors. While large companies in the U.S. achieved strong returns in excess of 10% for the fiscal year, these returns were not broad-based across all equity markets. Smaller-sized companies in the U.S. struggled, as investors were willing to pay premium prices for large capitalization stocks, particularly growth-oriented companies in the technology sector. Smaller companies in the U.S., as represented by the Russell 2000, generated a negative return of -3.3%, underperforming large companies by over 13%. Non-U.S. stocks did not fare much better, as weaker growth in international economies relative to the U.S., coupled with concerns over slowing global growth relating to the trade tariffs, caused investors to prefer U.S. stocks to foreign equities. Foreign stocks, as represented by the MSCI All-Country World ex-U.S. index, generated a positive return of only 1.3%, trailing the S&P 500 by over 9%.

Fiscal year 2019 was also marked by extreme volatility in interest rates. As a result of the Federal Reserve raising the Federal Funds Rate nine times over a period of three years, the rate on the ten-year U.S. Treasury Note peaked at roughly 3.25% in November of 2018. Due to slowing global growth and indications that the Federal Reserve would end its hiking cycle, the ten-year rate dropped precipitously over the remainder of the fiscal year. As of June 30, 2019, the ten-year rate stood at 2.0%, representing a drop of about 1.25% from the November 2018 high. This decrease in interest rates provided a favorable environment for bonds, particularly the more duration-sensitive, long maturity portion of the treasury curve. In fact, long maturity U.S. Treasury bonds achieved higher returns than stocks, returning 12.3% for the fiscal year, versus 10.4% for the S&P 500.

PUBLIC EQUITIES

As of June 30, 2019, approximately $19.7 billion was invested in public equities, representing 36.4 percent of total assets. The public equity program consists of three components: U.S. equities, international developed equities and emerging markets equities.

The Terra Maria program, which seeks to identify promising smaller or developing management firms, is an integral part of the public equities asset class. As of June 30, 2019, 76 percent of the public market Terra Maria program was invested in equities, with 44 percent in international stocks. Each of the managers in the Terra Maria program has an active management mandate. A more detailed discussion of the Terra Maria program follows below.

A. U.S. Equities

As of June 30, 2018, approximately $6.4 billion, or 12.3 percent of total assets, was invested in U.S. public equities. Passively and enhanced-passively managed equities totaled $5.9 billion, while Terra Maria program assets were $509 million, representing 11.4 percent, and 0.9 percent of total assets, respectively.

U.S. Equity	$ Millions	% of Total Plan
Passively/Enhanced Managed	**$6,129**	**11.3%**
Terra Maria Program	**$483**	**0.9%**
Total U.S. Equity	**$6,612**	**12.2%**

For fiscal year 2019, U.S. equities returned 8.2 percent, compared to 9.0 percent for its benchmark, the Russell 3000 Index.

B. International Equities

As of June 30, 2019, approximately $3.9 billion, or 7.2% of total assets, was invested in international equities. Passively and enhanced-passively managed assets totaled approximately $1.6 billion, while actively managed assets outside of the Terra Maria program totaled approximately $1.2 billion and Terra Maria assets were $1.1 billion, representing 2.9%, 2.2% and 2.1% of total assets, respectively. As more fully described below, in 2009 the System instituted a currency overlay program which is designed to protect the value of some foreign equities in a rising dollar environment.

International Equity	$ Millions	% of Total Plan
Passively/Enhanced Managed	**$1,588**	**2.9%**
Actively Managed (excluding T.M.)	**$1,180**	**2.2%**
Terra Maria Program	**$1,149**	**2.1%**
Currency Overlay	**$0.0**	**0.0%**
Total International Equity	**$3,917**	**7.8%**

For fiscal year 2019, international equities, including the impact of the currency overlay program, returned 0.4%, compared to 1.3% for its benchmark, the MSCI World ex-U.S. Index.

C. Emerging Market Equities

As of June 30, 2019, approximately $5.1 billion, or 9.4% of total assets, was invested in emerging market equities. Actively managed long-only assets outside of the Terra Maria program totaled $4.6 billion, Terra Maria assets were $366 million, and passively-managed assets were $201 million, representing 8.3%, 0.70%, and 0.4% of total assets, respectively.

Emerging Equity	$ Millions	% of Total Plan
Passively Managed	**$202**	**0.4%**
Actively Managed (excluding T.M.)	**$4,552**	**8.3%**
Terra Maria Program	**$366**	**0.7%**
Total Emerging Markets Equity	**$5,120**	**9.4%**

For the fiscal year, the portfolio returned 3.3% compared to 1.2% for the MSCI Emerging Market Index.

D. Global Equities

As of June 30, 2019, approximately $4.1 billion, or 7.5% of total assets was invested in global equities, which includes both U.S. and foreign stocks. This portfolio is comprised of 100% active mandates.

Global Equity	$ Millions	% of Total Plan
Actively Managed	**$4,064**	**7.5%**
Total Emerging Markets Equity	**$4,064**	**7.5%**

For the fiscal year, the portfolio returned 1.8% compared to 5.7% for the MSCI AC World Index.

CURRENCY OVERLAY PROGRAM

The currency overlay program was implemented in May of 2009. An objective of the program is to provide insurance against a strengthening dollar, which could negatively impact returns from foreign currency denominated equities. The manager in this program uses a systematic currency overlay strategy and generally, does not make fundamental currency valuation assessments. The strategy is also dynamic in that the degree to which currency hedging is applied changes depending on currency market conditions. The manager in this program tends to use low hedge ratios when the dollar is weak, and high hedge ratios when the dollar is strong.

During fiscal year 2019, the currency program enhanced returns in the System's foreign equity holdings, as the U.S. dollar strengthened relative to other currencies. The currency hedging program generated $29.8 million in value during the fiscal year. In addition to generating positive results during fiscal year 2019, the currency program has served to reduce volatility and improve the risk/return profile of the System's non-U.S. equity exposure since its inception.

PRIVATE EQUITY

As of June 30, 2019, private equity totaled $7.6 billion, or 14.0% of total assets. This asset class includes buyouts, growth equity, venture capital, secondaries and funds-of-funds.

In fiscal year 2019, commitments were made to 21 private equity funds, totaling $1.7 billion. Since the inception of the private equity program in fiscal year 2005, $15.6 billion in commitments have been made to 225 different funds. Unfunded commitments totaled $4.8 billion as of June 30, 2019. Future commitments will follow a pacing model designed to maintain the 13% allocation target for invested assets. In fiscal year 2019, the private equity program returned 13.7%, compared to 10.9% for its benchmark, the State Street Private Equity Index. This return is net of all fees, expenses and carried interest.

RATE SENSITIVE

As of June 30, 2019, the rate sensitive portfolio represented $9.8 billion, or 18.1% of total assets. The rate sensitive portfolio returned 9.4% for the year, compared to 9.8% for its blended benchmark: 53% Barclays US Government Long Bond Index, 13% Barclays US Investment Grade Corporate Index, 13% Barclays US Securitized Index, and 21% Barclays US TIPS Index.

CREDIT/DEBT STRATEGIES

The credit/debt strategies portfolio totaled approximately $4.8 billion, representing 8.9% of total plan assets as of June 30, 2019. Investments in this asset class are held in both liquid and illiquid structures. Typical asset types in the portfolio include: mezzanine and distressed debt, high yield bonds, bank loans, and emerging market debt. The portfolio has a blended benchmark of 78 percent U.S. (80% BC U.S. Corporate High Yield Index, 20% S&P LSTA Leveraged Loan Index), and 22% Non-U.S. (50% BBG Barclays EM Local Government Index, 25% BBG Barclays EM Hard Currency Sovereign Index, 25% BBG Barclays EM USD Corporate Index). The portfolio returned 6.5% for the fiscal year, versus 7.3% for its benchmark.

REAL ASSETS

The real assets portfolio totaled approximately $7.2 billion, representing 13.3% of total assets as of June 30, 2019. The objectives of this asset class are to provide a level of protection against inflation, and to enhance diversification for the total fund. As of June 30, 2019, the largest component of the asset class was real estate, totaling $5.1 billion, or 9.4% of total assets. The remaining assets consisted of investments associated with natural resources and infrastructure totaling $2.2 billion or 4.0% of total assets.

The real assets portfolio returned 5.3% for the fiscal year, compared to 6.2% for its blended benchmark, which consists of approximately 70% real estate with the remainder in natural resources and infrastructure. Real estate achieved a 6.0% return, versus the real estate benchmark return of 7.7%. Much of the underperformance was due to a mismatch in the timing of the asset class returns relative to the benchmark return, as the benchmark return is typically lagged by one quarter and most of the assets reflect pricing as of June 30 2019. The natural resources and infrastructure portion of the portfolio outperformed its benchmark by 1.4%, as the private natural resources portfolio outperformed the public benchmark.

ABSOLUTE RETURN

The absolute return portfolio totaled approximately $4.0 billion, representing 7.4% of total assets as of June 30, 2019. The portfolio consists of event-driven, global macro, multi-asset, relative value multi-strategy, and opportunistic funds. Its goal is to provide diversification for the total plan through its low correlation to the broad financial markets. The absolute return portfolio returned 3.0%, compared to the 3.1% return for its benchmark, Hedge Funds Research, Inc. (HFRI) Fund of Funds Index: Conservative +1%.

TERRA MARIA PROGRAM

As previously mentioned, the Terra Maria program seeks to identify promising smaller or developing managers. The five public market program managers serve as an extension of staff to source investment managers, perform manager due diligence, monitor managers and prepare manager "hire/fire" and funding recommendations. The managers include Acuitas Investment Management, Attucks Asset Management, Capital Prospects LLC, FIS Group, and Leading Edge Investment Advisors.

Terra Maria publicly-traded assets totaled approximately $2.6 billion, or 4.8 percent of total assets at June 30, 2019. The program returned 0.15% for the fiscal year, underperforming its custom benchmark return of 0.32%. The relative performance results have remained positive since the April 2007 inception of the program.

At the end of fiscal year 2019, $11.9 billion, or 21.9 percent of the System's total assets, were managed by minority and women-owned firms.

INVESTMENT MANAGEMENT FEES

The asset allocation of the System is the primary determinant of return. The asset allocation is also the primary determinant in the cost of investing the assets. Thirty-one percent of the policy allocation does not have public market benchmarks and therefore does not have a passive option for implementation. These alternative assets such as closed-end limited partnerships used for private equity, infrastructure and some real estate, in addition to open-end partnerships used for real estate and hedge fund strategies are included in the asset allocation with the objective of earning higher returns over time, reducing risk by providing returns that are differentiated from stock and bond returns, or for both reasons.

These alternative assets are typically structured as limited partnerships with embedded profit sharing provisions to motivate the manager to make profitable investments, and to ensure alignment of interests. Carried interest represents the portion of the investment profits that is earned by managers, and is only paid if performance thresholds are achieved. The percentage of profits that is allocated to the manager is substantially lower than the amount received by the System. Because of this disproportionate sharing of profits, the amounts realized by the System far exceed any incentive earned by investment managers. Large amounts of carried interest should be considered a positive result, as this would imply much greater gains to the System. In calendar year 2018, the System realized an estimated $795.5 million in profits from these private alternative investments, while the investment managers, or general partners, earned roughly $162.5 million in carried interest incentives.

The Board is mindful of the negative effects fees have on net investment performance and is committed to aggressively negotiating fair and reasonable terms to mitigate the drag on performance, while maintaining exposure to investments that exhibit positive risk and return characteristics in a total portfolio context.

CONCLUSION

Fiscal year 2019 was unique in that the overall global stock market exhibited such a wide range of returns, where diversification into smaller U.S. and foreign stocks detracted from results. Each year one or two asset classes stand out as particularly strong performers. From year to year, the list of leading and lagging asset classes changes. While this year's performance would have been better if the entire public equity portfolio was allocated to large companies located in the U.S., this will not be the outcome every year. It is not possible to know ahead of time which asset class will perform best in any given year. Therefore, a key to successful long-term investing is diversification. The System's Board of Trustees has adopted a diversified allocation to allow it to collect the diversified risk premiums associated with the various asset classes. The best way to account for the unknown is to maintain a balanced and diversified portfolio that is designed to meet the long-term risk and return objectives in the most efficient way possible.

Respectfully submitted,

Andrew C. Palmer CFA
Chief Investment Officer

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MARYLAND STATE RETIREMENT AND PENSION SYSTEM

INVESTMENT PORTFOLIO SUMMARY
as of June 30, 2019 and 2018
(Expressed in Thousands)

	2019		2018	
	Fair Value	**% of Fair Value**	**Fair Value**	**% of Fair Value**
Rate Sensitive				
Fixed Income	$ 8,159,802	15.0 %	$ 8,155,151	15.7 %
Inflation linked bonds	2,159,487	4.0	2,000,831	3.9
(1) Cash (non-manager)	263,206	0.5	947,306	1.8
(2) Net cash & cash equivalents (manager)	-504,851	-0.9	163,872	0.3
Total Rate Sensitive	**10,077,644**	**18.6**	**11,267,160**	**21.7**
Credit				
Hight Yield Bond/Bank Loans	3,471,772	6.4	2,775,004	5.4
Emerging markets debt	1,013,022	1.9	1,323,123	2.5
(2) Net cash & cash equivalents (manager)	356,041	0.7	60,951	0.1
Total Credit	**4,840,835**	**9.0**	**4,159,078**	**8.0**
Equity				
Domestic stocks	6,565,295	12.1	6,384,482	12.3
Emerging markets stocks	5,017,336	9.3	4,846,222	9.4
Global stocks	4,013,443	7.4	4,106,295	7.9
International stocks	3,794,391	7.0	3,916,511	7.5
(2) Net cash & cash equivalents (manager)	322,607	0.6	230,648	0.4
Total Public Equity	**19,713,072**	**36.4**	**19,484,158**	**37.5**
Private Equity	**7,604,200**	**14.0**	**6,484,363**	**12.5**
Total Equity	**27,317,272**	**50.4**	**25,968,521**	**50.0**
Absolute Return	**4,013,023**	**7.4**	**4,363,245**	**8.4**
Real Estate (includes private)	**5,064,575**	**9.3**	**4,624,011**	**8.9**
Multi Asset	**651,962**	**1.2**	**-**	**-**
Natural Resources & Infrastructure	**2,132,249**	**3.9**	**1,524,763**	**2.9**
(2) Net cash & cash equivalents (manager)	**107,045**	**0.2**	**49,812**	**0.1**
Total Portfolio	**$ 54,204,605**	**100.0 %**	**$51,956,590**	**100.0 %**

(1) Securities lending collateral payable has been netted against the actual collateral. The amounts net to zero.
(2) Includes investment receivables and payables.

Note: This schedule includes assets invested on behalf of the Maryland Transit Administration.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

INVESTMENT PORTFOLIOS BY MANAGER
as of June 30, 2019
(Expressed in Thousands)

	Fair Value	Investment Advisory Fees
Public Equity		
RhumbLine Advisors	$ 4,834,045	$ 1,286
D E Shaw & Co., LP	1,891,146	6,428
AQR Capital Management, LLC	1,480,809	5,102
Baillie Gifford & Company	1,437,665	6,564
Dimensional Fund Advisors, Inc.	1,384,192	6,158
T. Rowe Price Associates, Inc.	930,815	1,460
Marshall Wace	828,291	19,719
Axiom International Investors	804,529	6,085
Longview Partners Ltd.	704,961	3,581
FIS Group, Inc.(1)	661,230	3,988
Artisan Partners Limited Partnership	611,401	2,640
Westwood Global Investment	570,346	3,417
Brown Capital Management	568,264	2,809
Fisher Investments	493,358	2,839
Attucks Asset Management, LLC (1)	428,246	2,441
Leading Edge Invest. Advisors, LLC (1)	421,291	2,219
Polunin Capital Management	412,458	3,590
Capital Prospects, LLC (1)	387,703	2,233
Equity Long Short (1)	362,773	2,420
Acadian Asset Management	263,260	1,315
State Street Global Advisors	129,695	124
Acuitas Asset Management (1)	95,105	820
Record Currency Management	(116)	4,431
Other (2)	11,605	2,084
Total Public Equity	**$19,713,072**	**$ 93,753**

	Fair Value	Investment Advisory Fees
Fixed Income Manager		
State Street Global Advisors	$ 4,115,800	$ 579
Pacific Investment Management Company	2,939,609	3,890
Western Asset Management	2,580,371	3,964
Pine Bridge Investments LLC	648,108	922
Capital Prospects, LLC (1)	634,835	1,355
MetLife Investment Management	538,698	1,056
TIPS MD	497,610	N/A
Credit Suisse Asset Management	486,187	1,179
Double Line US Securitized	425,967	635
Dodge & Cox	332,892	618
Cash & Cash Equitization	263,206	N/A
Nominal FI Income Structural/Tactical	38,870	N/A
Other (2)	16,565	1,035
Total Fixed Income	**$13,518,718**	**$ 15,233**
Alternative Investment		
Private Equity Funds (1)	$ 7,604,200	$ 110,473
Credit/Debt Related (1)	1,399,958	18,678
Multi-Asset (3)	725,130	1,445
Absolute Return (1)	4,021,770	72,869
Real Assets		
Natural Resources & Infrastructure (1)	2,150,365	15,690
Private Real Estate (1)	4,541,164	36,136
Morgan Stanley Investment Management	284,615	2,291
State Street Global Advisors	246,466	174
Record Currency Management	(670)	270
Other (2)	(183)	5,440
Total Alternative Investments	**$20,972,815**	**$ 263,466**
Total	**$54,204,605** (4)	**$ 372,452** (5)

(1) Sub-managers separately listed on the following pages
(2) Consulting fees and/or investment managers no longer under contract as of 6/30/19
(3) Assets that represent the overall allocation.
(4) Includes assets invested on behalf of the Maryland Transit Administration.
(5) Includes management fees allocated to the Maryland Transit Administration.

Note: Investment Advisory Fees represents management fees invoiced or reported on capital statements.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

ALTERNATIVE INVESTMENTS RELATIONSHIP LISTING

as of June 30, 2018

Private Equity

1315 Capital, LP
1315 Capital II, LP
Abbott Capital Private Equity Fund III, LP
Adams Street Partners, LLC
Advent Central & Eastern Europe IV, LP
Advent International GPE V D, LP
Advent International GPE VI A, LP
Advent International GPE VIII B, LP
Apax Europe VI A, LP
Apax Europe VII A, LP
Apax France IX
Apax IX
Apollo Investment Fund VII (AIF), LP
Apollo Investment Fund VIII (AIF), LP
Apollo Investment Fund IX (AIF), LP
Arcadia II Beteiligungen BT GmbH & Co
Astorg VI
Astorg VII
Audax Private Equity Fund II, LP
Audax Private Equity Fund III, LP
Audax Private Equity Fund IV, LP
Audax Private Equity Fund V, LP
Bain Capital Asia Fund III
Bain Capital Europe Fund IV, LP
Bain Capital Life Sciences Fund, LP
Bain Capital Fund IX, LP
Bain Capital IX Coinvestment Fund, LP
Bain Capital Fund X, LP
Bain Capital X Coinvestment Fund, LP
Bain Capital Fund XI, LP
Bain Capital Fund XII, LP
Baring Asia Private Equity Fund VI, LP
Baring Asia Private Equity Fund VII, LP
Black River Capital Partners Fund (Agr. A) LP
Blackstone Capital Partners VI, LP
Blackstone Capital Partners VII, LP
Blue Wolf Capital Fund III, LP
Blue Wolf Capital Fund IV, LP
Bridgepoint Europe Fund V,LP
Bridgepoint Europe Fund VI,LP
CDH Fund V, LP
Charterhouse Capital Partners VIII, LP
Clayton, Dubilier & Rice Fund VIII, LP
Clayton, Dubilier & Rice Fund IX, LP
Clayton, Dubilier & Rice Fund X, LP
Clearlake Capital partners III, LP
Clearlake Capital partners IV, LP
Clearlake Capital partners V, LP
Coller Capital Partners VI, LP
Coller Capital Partners VII, LP
Crescent Capital Partners IV, LP
Crescent Capital Partners V, LP
CVC European Equity Partners V-B, LP
CVC Capital Partners VII, LP
Dover Street VII, LP
Equistone Partners Europe Fund IV, LP
Equistone Partners Europe Fund V, LP
Equistone Partners Europe Fund VI, LP
Everstone Capital Partners II, LLC
Everstone Capital Partners III, LLC
Frazier Healthcare V, LP
Frazier Healthcare VI, LP
Frazier Healthcare VII, LP
Frazier Healthcare Growth Buyout Fund VIII, LP
Frazier Healthcare Growth Buyout Fund IX, LP
Frazier Life Sciences VIII, LP
Frazier Life Sciences IX, LP
Frontier Fund III, LP
Frontier Fund IV, LP
Frontier Fund V, LP
GGV Capital VII, LP
GGV Capital VII Plus, LP
GGV Discovery II, LP
Goldman Sachs Vintage Fund V, LP
Great Hill Equity Partners III, LP
Great Hill Equity Partners IV, LP
Great Hill Equity Partners V, LP
Great Hill Equity Partners VI, LP
Green Equity Investors VII
HarbourVest Partners VI - Buyout Fund, LP
HarbourVest Partners VI - Partnership Fund, LP
Hellman & Friedman Capital Partners VI, LLC
Hellman & Friedman Capital Partners VII, LLC
Hellman & Friedman Capital Partners VIII, LLC
Hg Capital 5, LP
Hg Capital 6A, LP
Hg Capital 7C, LP
Hg Capital 8 A, LP
Hg Capital Mercury A, LP
Institutional Venture Partners XV
Institutional Venture Partners XVI
Landmark Equity Partners XIV, LP
Landmark Equity Partners XV, LP
Landmark Equity Partners XVI, LP
Landmark Equity Partners Co-Investment Fund XVI, LP
Lexington Capital Partners, VII
Lexington Middle Market Investors III, LP
Lexington Middle Market Investors IV, LP
Lexington Co-Investment Partners IV
Lion Capital Fund I, LP
Littlejohn Fund III, LP
Littlejohn Fund IV, LP
Littlejohn Fund V, LP
LLR Equity Partners IV, LP
LLR Equity Partners V, LP
Longitude Venture Partners, LP
Longitude Venture Partners II LP
Longitude Venture Partners III LP
Madison Dearborn Capital Partners V, LP
Madison Dearborn Capital Partners VI, LP
Madison Dearborn Capital Partners VII, LP
Maryland Innovation Opportunity Fund I
MBK Partners Fund III, LP
MBK Partners Fund IV, LP
MD Asia Investors, LP
MD Asia Investors II, LP
MD Asia Investors III, LP
Navis Asia Fund VI, LP
New Mainstream Capital Fund II, LP
New Mainstream Capital Fund III, LP
New Mountain Partners III, LP
New Mountain Partners IV, LP
New Mountain Partners V, LP
North Sky Clean Tech Fund IV, LP
Orchid Asia V, LP
Orchid Asia VI, LP
Orchid Asia VII, LP
PAG Asia Capital II, LP
Pacific Equity Partners V, LP
Partners Group Secondary 2008, LP
Partners Group Secondary 2011, LP
Partners Group Emerging 2011, LP
Partners Group Secondary 2015, L.P
Point 406 Ventures II, LP
Point 406 Ventures III, LP
Point 406 Ventures 2016 Opportunities Fund
Roark Capital Partners IV, LP
Roark Capital Partners V, LP
Silver Lake Partners V, LP
TA X, LP
TA XI, LP
TA XII, LP
TDR Capital III, LP
TDR Capital IV, LP
Thoma Bravo Fund XII, LP
Thoma Bravo Fund XIII, LP
Tiger Iron Oldline Fund, LP
TPG Partners VI, LP
TPG Partners VII, LP
Vista Equity Partners Fund IV, LP
Vista Equity Partners Fund V, LP
Vista Equity Partners Fund VI, LP
Vista Equity Partners Fund VII, LP
Vista Foundation Fund II, LP
Vista Foundation Fund III, LP
Vistria Fund I, LP
Vistria Fund II, LP
Wind Point Partners VII, LP
Wind Point Partners VIII, LP

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

ALTERNATIVE INVESTMENTS RELATIONSHIP LISTING

as of June 30, 2019

(continued)

Private Real Estate

AEW Senior Housing Fund II, LP
Carmel Partners Investment Fund VII
CBRE US Core Partners
CBRE Strategic Partners US Value 6, LP
CBRE Strategic Partners US Value 7, LP
Covenant Apartment Fund VII
Federal Capital Partners Fund II
Federal Capital Partners Fund III
Frogmore Real Estate Partners II, LP
GI Partners Fund III, LP
GI Partners Fund IV, LP
Heitman America Real Estate Trust
JP Morgan Investment Management Inc
LASALLE Property Fund
Lion Industrial Trust
Lone Star Real Estate Fund II, LP
Lone Star Real Estate Fund III, LP
Lone Star Real Estate Fund IV, LP
Lone Star Real Estate Fund V, LP
Lubert Adler Real Estate Fund VI
Lubert Adler Real Estate Fund VI A
Morgan Stanley Prime Property Fund, LLC
Realty Associates Fund X
Rockwood Capital R E Partners Fund VIII, LP
Rockwood Capital R E Partners Fund IX, LP
Scout Fund II, LP
Starwood Hospitality Fund II, LP
Tristan Capital- European Special Opps 3
Tristan Capital- European Special Opps 4
Tristan Capital- European Special Opps 5
UBS Trumbull Property Fund
Waterton Residential Property Venture XIII

Real Return

Alinda Infrastructure Fund II, LP
Domain Timber Investments III
EIF US Power Fund IV, LP
Energy and Minerals Group V, LP
Energy and Minerals Group V-Accordion, LP
First Reserve Fund XII, LP
First Reserve Fund XIII, LP
Global Timber Investors 9
Hancock Timberland X, LP
Harvest Fund Advisors, LLC
Natural Gas Partners IX, LP
Natural Gas Partners X, LP
Natural Gas Partners XI, LP
Natural Gas Partners XII, LP
NGP Midstream & Resources, LP
Quantum Energy Partners IV, LP
Quantum Energy Partners V, LP
Quantum Energy Partners VI, LP
Quantum Energy Partners VII, LP
RMS Forest Growth III, LP
Tortoise Capital Advisors, LLC
White Deer Energy, LP

Absolute Return

1977 Merger Arbitrage Fund
Aristeia Capital
Aristeia-Coinvest
BlackRock Absolute Return Structural
Bridgewater All Weather
Bridgewater Pure Alpha
Carlson Double Black Diamond
Clover Parallel LLC
Empyrean Capital Fund
Exodus Point
Fort Global Contrarian
Graham Tactical Trend
Hudson Bay Fund
ILS Property & Casualty Fund
King Street Capital, LP
Lone Star Fund XI
Nephia Palmetto Fund
Nimbus Weather Fund Ltd
Petershill Private Equity
Shoals Financial Opportunity Fund, LP
Standard General Fund

FIXED INCOME RELATIONSHIP LISTING

as of June 30, 2019

Credit/Debt Related

Alchemy Special Opps Fund II, LP
Alchemy Special Opps Fund III, LP
Apollo Credit Opps Fund III, LP
CarVal Credit Value Fun I, LP
CarVal Credit Value Fund II, LP
CarVal Credit Value Fund III, LP
CarVal Credit Value Fund IV, LP
Castle Lake III, LP
Castle Lake IV, LP
Castle Lake V, LP
Crescent Capital Mezzanine Partners VI, LP
EIG Energy Fund XV, LP
EIG Energy Fund XVI, LP
Falcon Strategic Partners III, LP
Falcon Strategic Partners IV, LP
Garda Firvo
GSO Credit Alpha Fund II
KKR Mezzanine Partners I, LP
Merit Mezzanine Fund V, LP
Oaktree European Principal Fund III, LP
Oaktree Opportunity Fund VIII, LP
Oaktree Opportunity Fund VIIIB, LP
Oaktree Principal Fund V, LP
Park Square Capital Partners II, LP
Partners Group European Mezzanine 2008, LP
Peninsula Fund V, LP
Perella Weinberg Partners
Prudential Capital Partners III, LP
Prudential Capital Partners IV, LP
Shoreline China Val Fund III, LP
TA Subordinated Debt Fund III, LP
Varde Fund X, LP
Wayzata Opportunities Fund III, LP

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

TERRA MARIA PROGRAM
as of June 30, 2019

Terra Maria Program

Acuitas
Altravue Capital
Matarin Capital Management
Signia Capital Management

Attucks Asset Management
ARGA Investment Management, LP
Globe Flex Capital LP
Metis Global Partners
Paradigm Asset Management Company, LLC
Redwood Investments, LLC

Capital Prospects LLC
Birch Run Investments
Garcia Hamilton and Associates
Inview Investment Management, LLC
Lebenthal Lisanti Capital Growth LLC
Longfellow Investment Management
LM Capital Group LLC
Matarin Capital Management
New Century Advisors
Pacific Ridge Capital Partners
Pacific View Asset Management
Profit Investment Management
Pugh Capital Management
Ramirez Asset Management
Semper Capital Management
Sky Harbor Capital Management

FIS Group
Algert Global, LLC
Ativo Capital Management, LLC
Denali International Small Value
EAM Investors
FIS Emerging CIT
- Aubrey Capital Management
- Bayard Asset Management
- Change Global Investment
- Channing Global
- FIS Tactical Completion Fund

Global Alpha Capital Management
Metis Global Partners

Leading Edge Investment Advisors
Ativo Capital Management
Blackcrane Capital LLC
Black Creek Investment Management, Inc.
Henry James International
Redwood Investments, LLC
Strategic Global Advisors

Bold denotes Program Manager for the Terra Maria Program

EQUITY RELATIONSHIP LISTING
as of June 30, 2019

Equity Long/Short

Hoplite OnShore
Indus-Pacific Opportunities Fund
Marshall Wace TOPS China
Marshall Wace Eureka Fund

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

EQUITY COMMISSIONS TO BROKERS
for the Fiscal Year Ended June 30, 2019

(Expressed in Thousands)

Brokers (1)	Total Shares	Total Commission
Instinet	94,576	$ 399
UBS Securities	82,058	386
Cowen Execution Services	71,200	346
Morgan Stanley	79,394	301
J P Morgan Securities	57,819	237
Goldman Sachs	59,011	220
Loop Capital Markets	15,568	216
Credit Suisse Securities	90,858	201
Citigroup Global Markets	26,492	187
Merrill Lynch	68,551	183
Jefferies & Company	31,233	170
BNP Paribas Securities	23,291	130
Macquarie Bank Limited	31,916	122
Other Broker Fees	283,555	2,296
Total Broker Commissions	**1,015,522**	**$ 5,394**

(1) Proceeds from the sale and disbursements for the purchase of securities are reported net of brokers' commissions. As such, brokers' commissions are not included as investment expenses on the Statement of Changes in Plan Net Assets. Other broker fees include 166 brokers each receiving less than $100,000 in total commissions.

For the fiscal year ended June 30, 2019, total broker commissions averaged .53 cents per share.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

LARGEST STOCK & BOND HOLDINGS AT MARKET

as of June 30, 2019

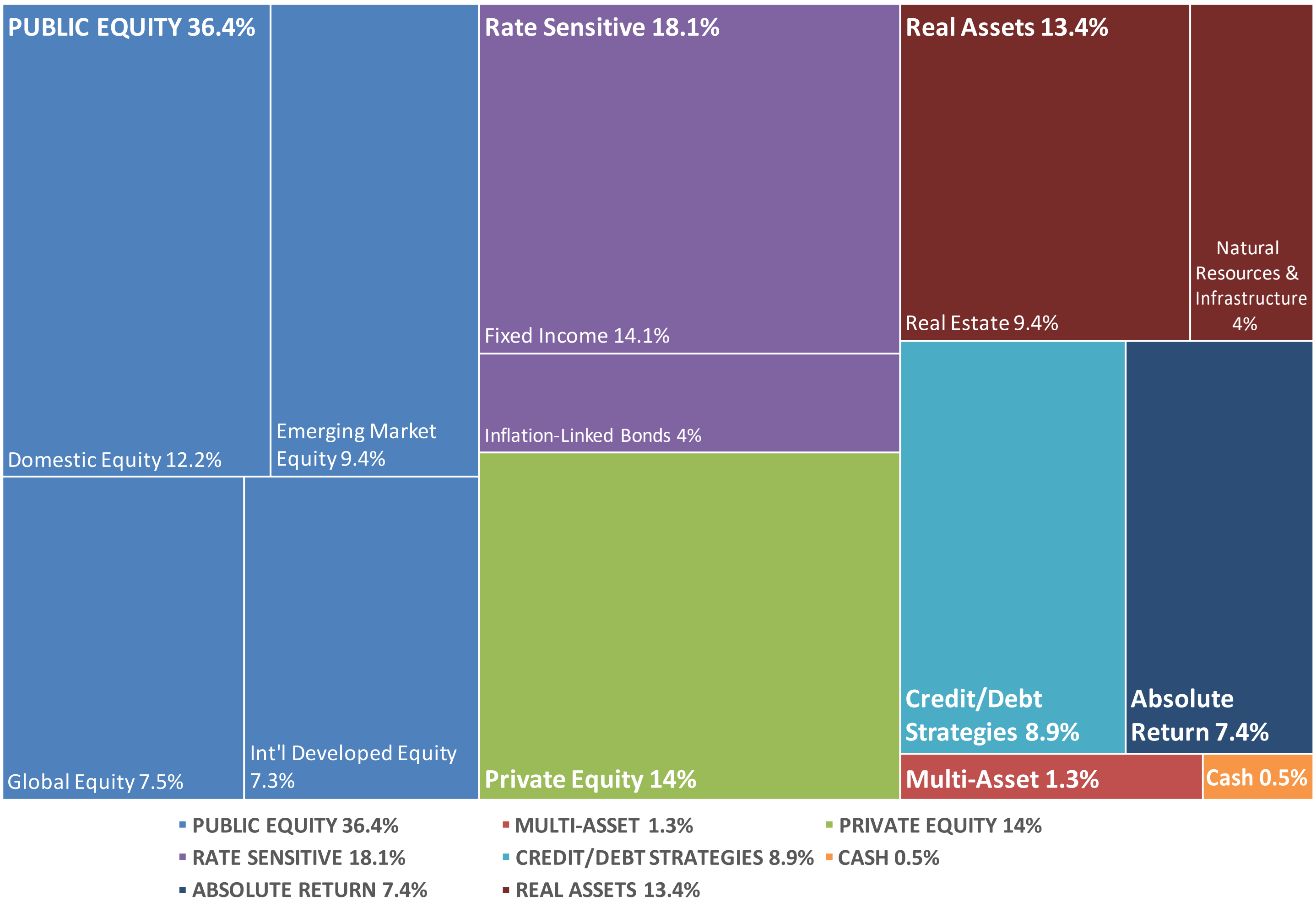
EQUITY INCOME SECURITIES:	**Shares**	**Fair Value**
Amazon.Com Inc.	110,661	$ 209,550,989
Microsoft Corporation	1,313,747	175,952,977
Apple Inc.	770,669	152,530,808
Alphabet Inc.	131,909	142,695,225
Facebook Inc. A	583,543	112,623,799
Tencent Holdings Ltd	1,876,500	84,691,699
Alibaba Group Holdings SP ADR	486,789	82,486,396
Samsung Electronics Co. Ltd.	1,918,372	78,087,285
Johnson & Johnson	556,156	77,461,408
Nestle SA Reg	717,592	74,379,331
Wells Fargo & Company	1,452,032	68,710,154
Illumina Inc.	182,855	67,318,068
Merck & Co. Inc.	753,504	63,181,310
UnitedHealth Group Inc.	247,417	60,372,222
Medtronic PLC	611,121	59,517,074

FIXED INCOME SECURITIES:	**Par Value**	**Fair Value**
United States Treasury Bonds, 2.875% May 15, 2043	$ 247,200,000	$ 264,387,816
United States Treasury Bonds, 4.375% Nov 15, 2039	181,800,000	241,723,098
United States Treasury Bonds, 3.0% May 15, 2045	202,250,000	221,172,510
United States Treasury Bonds, 3.75% Nov 15, 2048	170,370,000	200,551,046
United States Treasury Bonds, 4.625% Feb 15, 2040	122,650,000	168,399,677
United States Treasury Bonds, 3.75% Nov 15, 2043	135,385,000	166,661,643
United States Treasury Bonds, 4.25% May 15, 2039	119,940,000	156,905,508
United States Treasury Bonds, 3.0% May 15, 2047	141,114,000	154,548,053
United States Treasury Notes, 2.25% Aug 15, 2027	150,680,000	154,335,497
United States Treasury Bonds, 3.125% May 15, 2048	129,035,000	144,791,464
United States Treasury Bonds, 3.0% Nov 15, 2044	127,700,000	139,512,250
United States Treasury Bonds, 3.0% Feb 15, 2049	121,250,000	133,166,450
United States Treasury Bonds, 2.75% Aug 15, 2047	123,210,000	128,590,581
United States Treasury Bonds, 3.625% Aug 15, 2043	105,620,000	127,490,733
United States Treasury Bonds, 3.0% Feb 15, 2048	111,200,000	121,820,712

A complete list of portfolio holdings is available upon request.

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

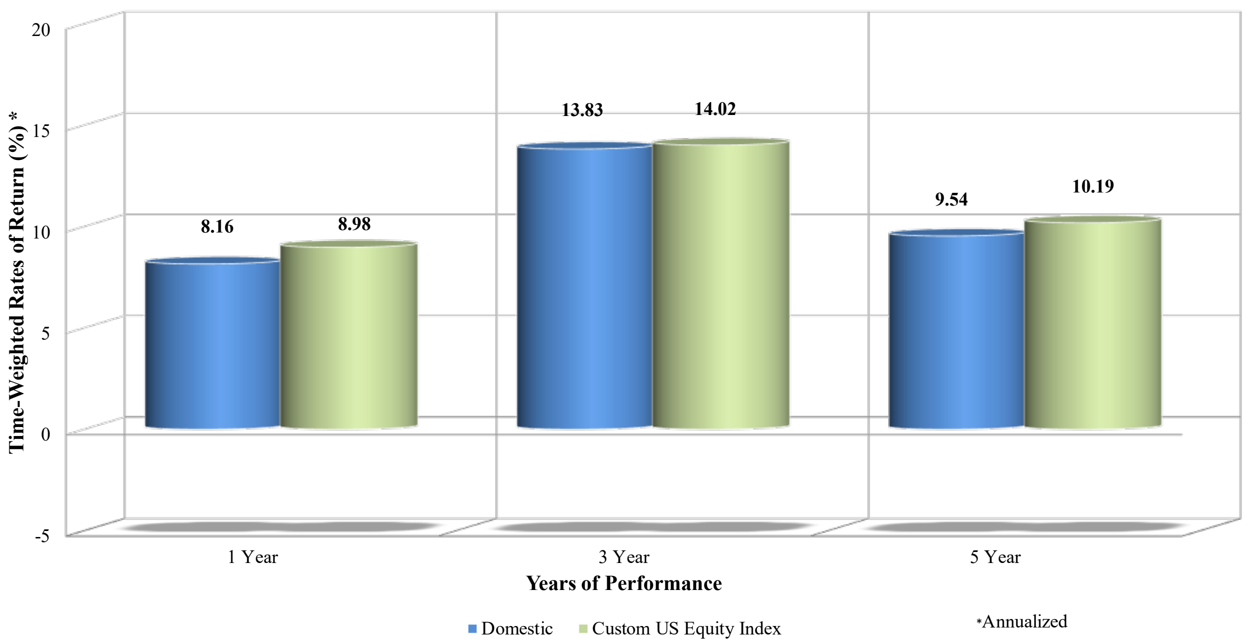
INVESTMENT PORTFOLIO ALLOCATION
as of June 30, 2019



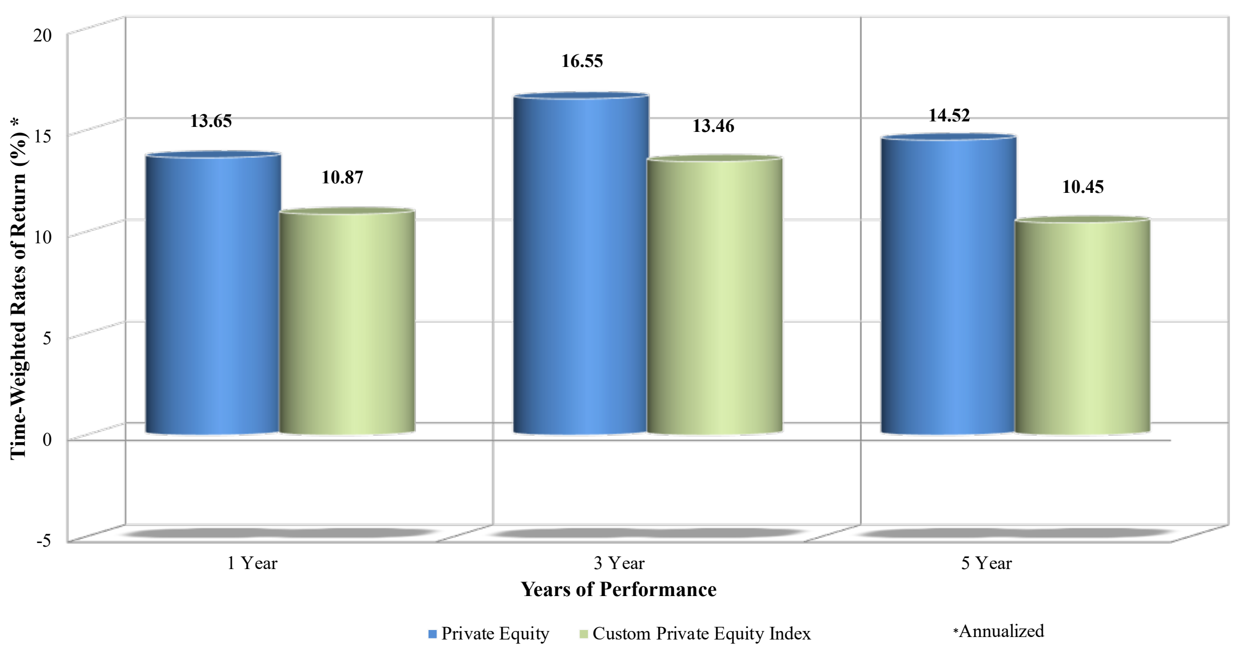
MARYLAND STATE RETIREMENT AND PENSION SYSTEM

COMPARATIVE INVESTMENT RETURNS ENDING JUNE 30, 2019

DOMESTIC EQUITY

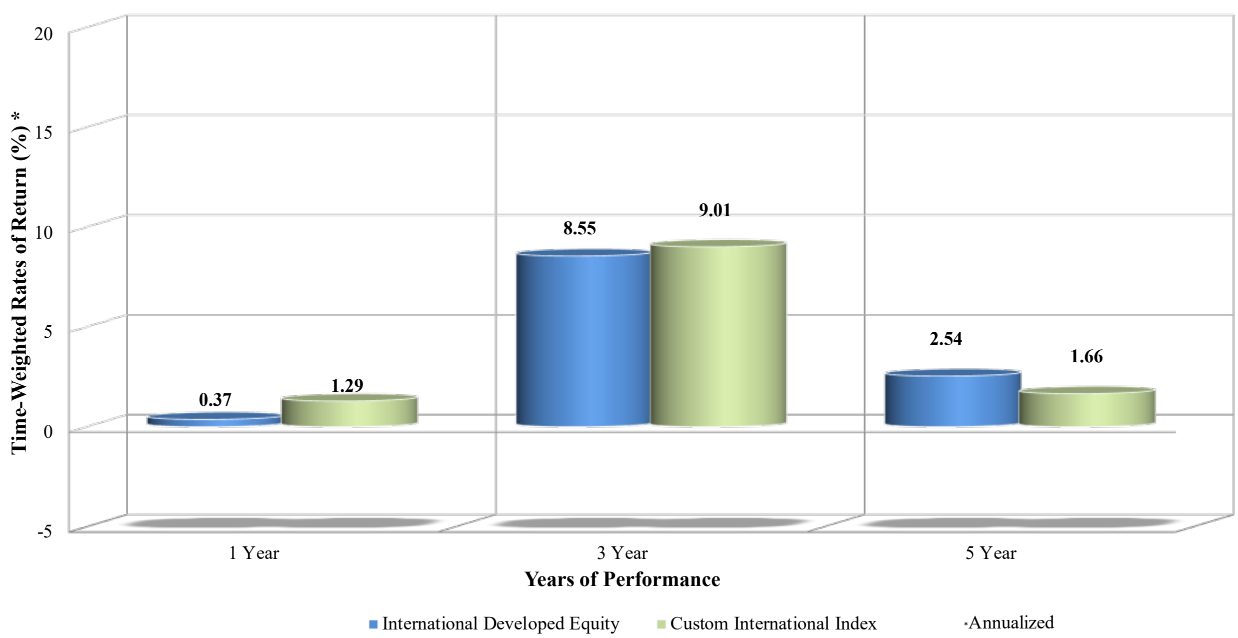


PRIVATE EQUITY

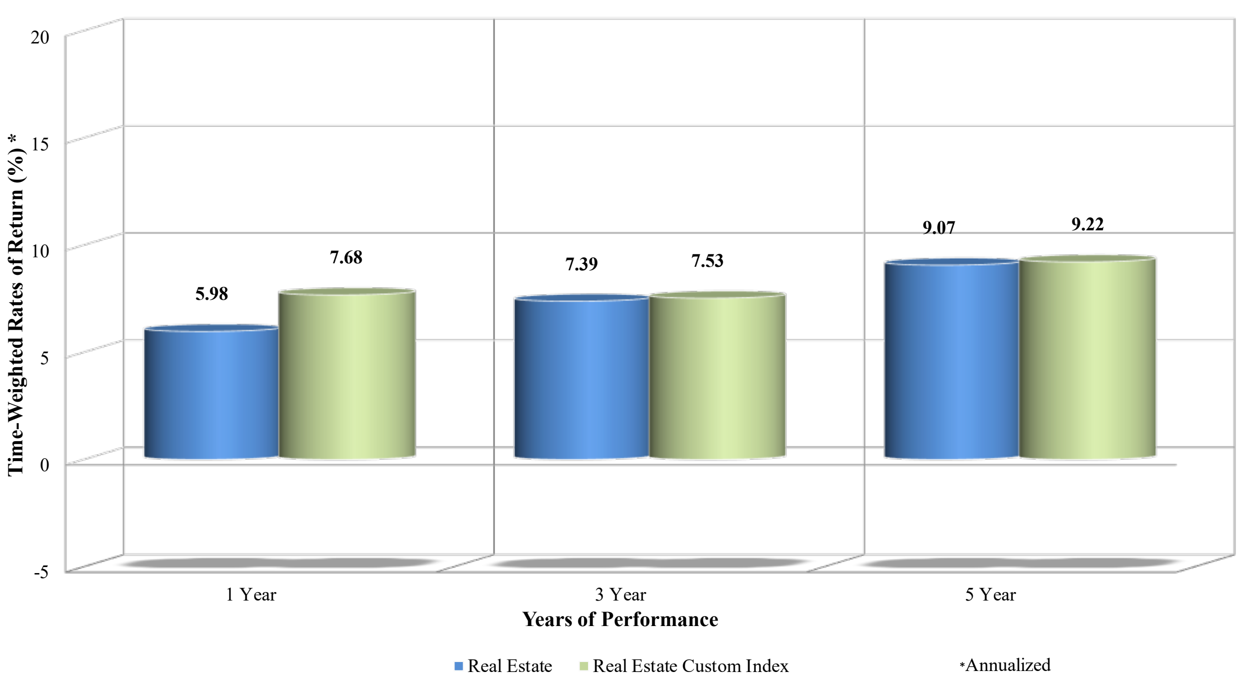


MARYLAND STATE RETIREMENT AND PENSION SYSTEM
COMPARATIVE INVESTMENT RETURNS ENDING JUNE 30, 2019

INTERNATIONAL DEVELOPED EQUITY

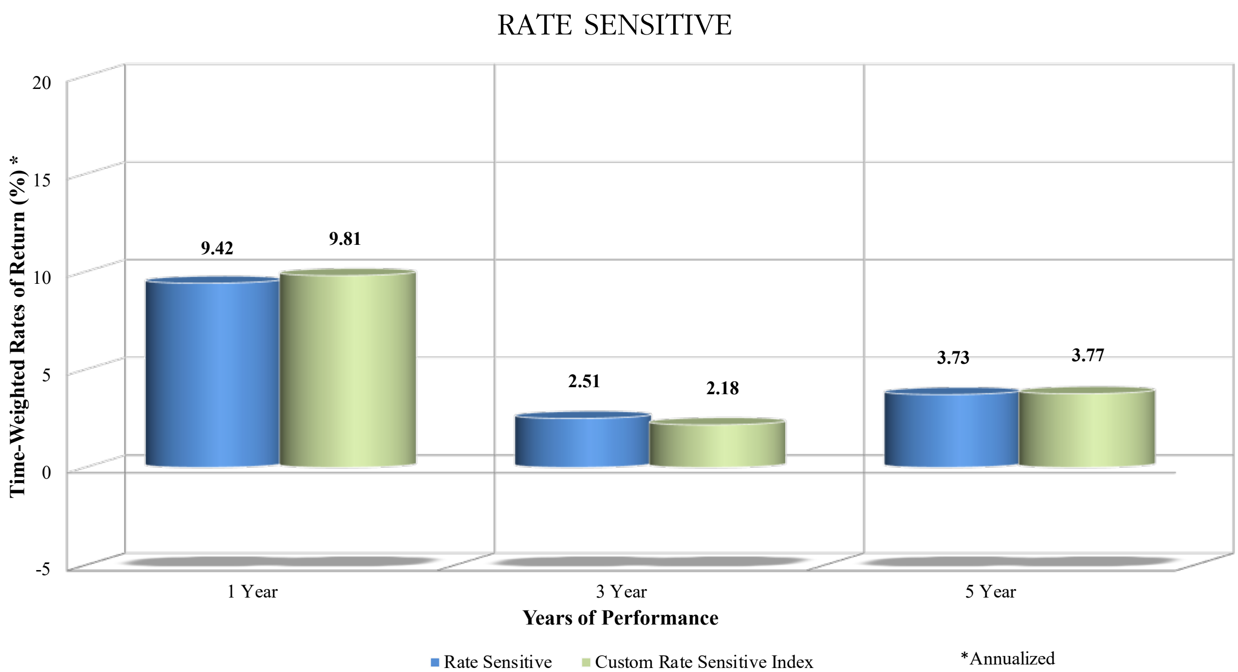


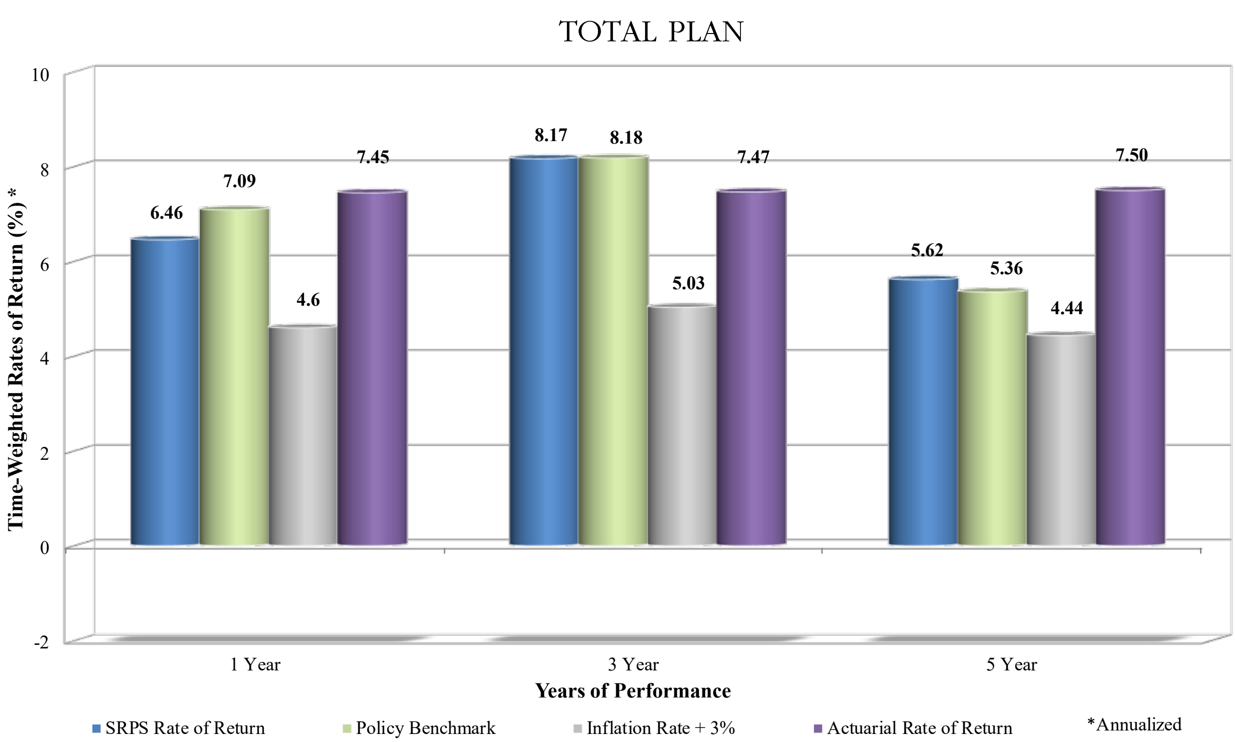
REAL ESTATE



MARYLAND STATE RETIREMENT AND PENSION SYSTEM

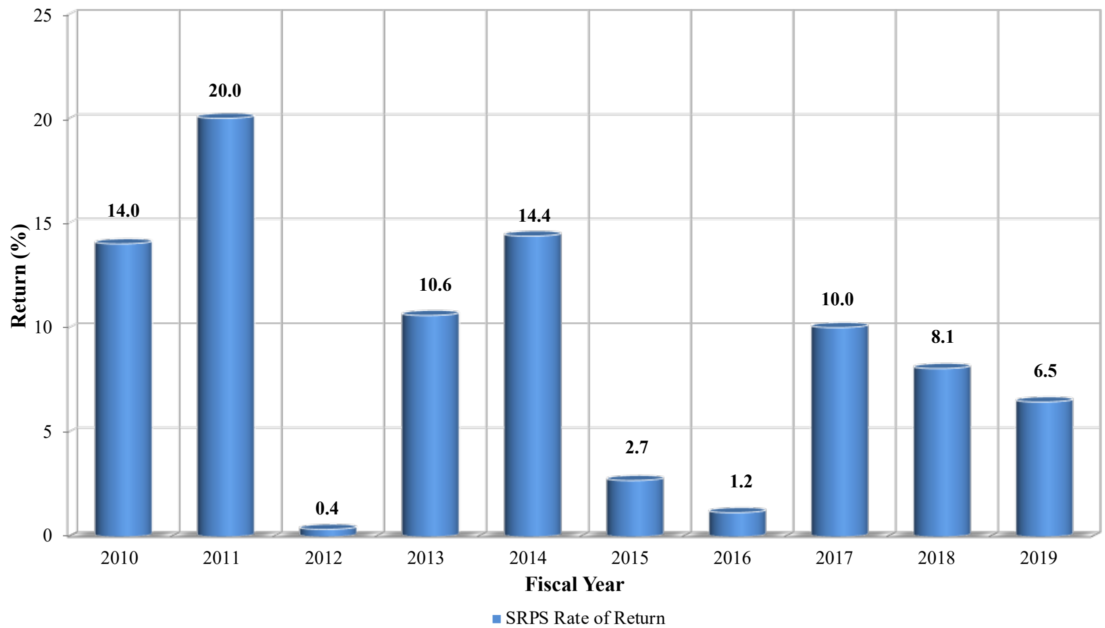
COMPARATIVE INVESTMENT RETURNS ENDING JUNE 30, 2019



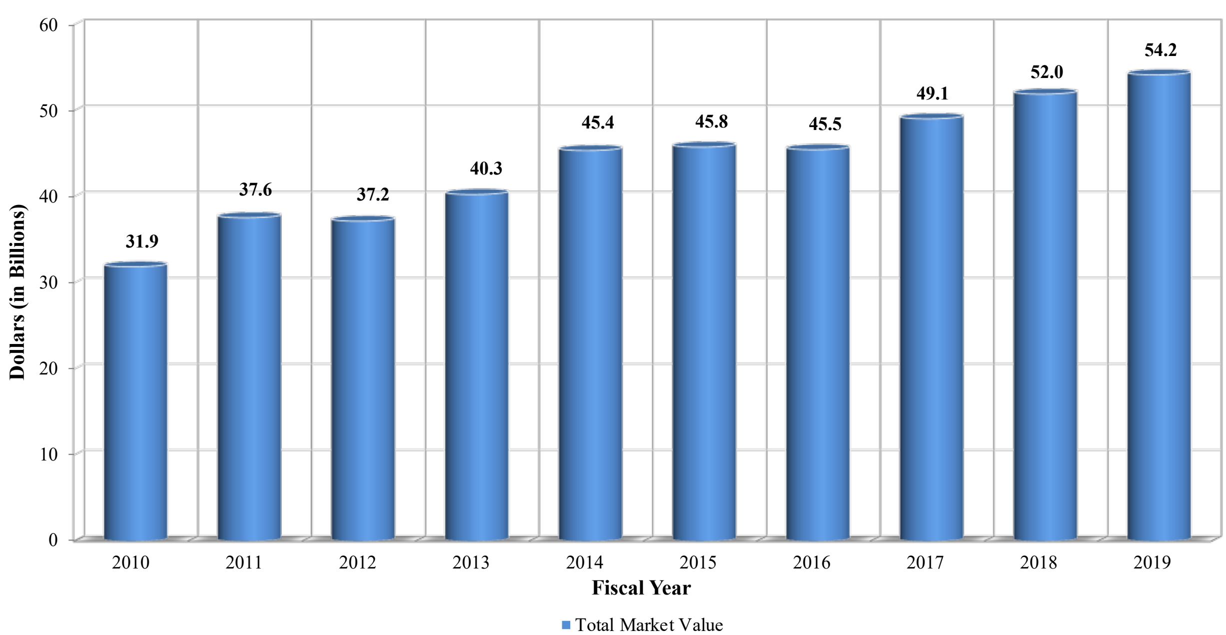


MARYLAND STATE RETIREMENT AND PENSION SYSTEM

TEN-YEAR HISTORY OF TIME-WEIGHTED ANNUAL RETURNS



TEN-YEAR GROWTH OF INVESTMENT PORTFOLIO



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Actuarial Section

GRS Retirement Consulting
800.521.0498 | P: 248.799.9000 | F: 248.799.9020 | www.grsconsulting.com
One Town Square | Suite 800 | Southfield, Michigan 48076-3723

December 4, 2019

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

Dear Members of the Board:

The results of the ***June 30, 2019 annual actuarial valuation*** of the Maryland State Retirement and Pension System ("MSRPS") are presented in this Section.

The purposes of the annual actuarial valuation are as follows:

- Measure the financial position of MSRPS with regard to funding,
- Provide the Board with State and Participating Governmental Unit ("PGU") contribution rates for certification,
- Determine actuarial and statutory contribution rates with reinvested savings,
- Discuss some of the risks associated with achieving the funding objectives of MSRPS, and
- Analyze the aggregate experience of the State Systems over the past year.

Information required by Statements No. 67 and No. 68 of the Governmental Accounting Standards Board ("GASB") for fiscal year 2019 is provided in a separate report.

The following schedules in the Actuarial Section, Financial Section, Statistical Section, and Plan Summary Section of the CAFR were prepared by Gabriel, Roeder, Smith & Company based upon certain information presented in the previously mentioned funding and financial reporting valuation reports:

Actuarial Section
Summary of Valuation Results
Actuary's Comments
Other Observations
Prior Year Asset Experience
Trends
Summary of Assumptions
Schedules of Active Membership by Plan
Summary of Unfunded Liabilities/Solvency Test
Summary of Retirees and Beneficiaries
Summary of Principal Results

Financial Section
Summary of Membership by System
Schedules of Funding Progress
Net Pension Liability/(Asset)
Key Methods and Assumptions Used in Valuation of Total Pension Liability
Sensitivity of Net Pension Liability/(Asset) to Changes in the Discount Rate
Schedules of Changes in Net Pension Liability/(Asset)
Schedule of Contributions from Employers and Other Contributing Entities

Statistical Section
- Schedule of Benefit Expense by Type
- Average Benefit Payments
- History of Employer Contributions by Plan
- History of Active Membership by Plan
- History of Retirees and Beneficiaries by Plan
- Principal Participating Employees

Plan Summary Section
- Membership Schedules

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

Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. The Board adopts these assumptions after considering the advice of the actuary and other professionals. The assumptions and methods used for funding and financial reporting purposes are in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. They are also in conformity with the Board's funding policy.

Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. GRS performed an experience study of MSRPS for the period 2014-2018 after completion of the June 30, 2018 valuations. Assumptions from the experience study including investment return, inflation, COLA increases, mortality rates, retirement rates, withdrawal rates, disability rates, and rates of salary increase were adopted by the Board for first use in the June 30, 2019 valuation. It is our opinion that the actuarial assumptions used for the valuation are reasonable.

Based upon the results of a projection performed in accordance with GASB Statement No. 67 parameters, the Single Discount rate for purpose of discounting pension liabilities for pension financial reporting purpose is 7.40%.

The computed contribution rates may be considered as a minimum contribution rate that complies with the funding policy stated in the Statutes and anticipate reinvested savings. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered.

The benefit provisions valued in the actuarial valuation as of June 30, 2019 are the same as the provisions from the last actuarial valuation as of June 30, 2018. Portions of the savings from the 2011 pension reforms passed by the General Assembly are to be reinvested as additional contributions into the Systems. Legislation enacted in 2015 reduced the amount of reinvested savings to $75 million per year beginning in fiscal year 2016 until the combined funded ratio of the Systems reaches 85% at which point the additional contributions cease.

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

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The actuary did not perform an analysis of the potential range of such future measurements in this actuarial valuation report.

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

This report should not be relied on for any purpose other than the purposes previously described. Determinations of the financial results associated with benefits described in this report in a manner other than the intended purpose may produce significantly different results.

The signing actuaries are independent of the plan sponsor.

This is one of multiple documents comprising the actuarial report. Other documents comprising the actuarial report include the PowerPoint presentation presented to the Board in November 2019 and separately to the Joint Committee on Pensions in November 2019. Not all of these documents have been issued as of this date.

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

Respectfully submitted,

Brian B. Murphy, FSA, MAAA Consulting Actuary	Brad L. Armstrong, ASA, MAAA Consulting Actuary	Jeffrey T. Tebeau, ASA, EA, MAAA Consulting Actuary

BBM/BLA/JTT:rmn:dj

3108

INTRODUCTION

The funding valuation report presents the results of the June 30, 2019 annual actuarial valuation of the Maryland State Retirement and Pension System (MSRPS). The purposes of the annual funding valuations are as follows:

- Measure the financial position of MSRPS with regard to funding,
- Provide the Board with State and Participating Governmental Unit ("PGU") contribution rates for certification,
- Determine actuarial and statutory contribution rates with reinvested savings,
- Discuss some of the risks associated with achieving the funding objectives of MSRPS, and
- Analyze the aggregate experience of the State Systems over the past year.

A summary of the primary funding valuation results as of June 30, 2019 is presented on the following page.

The Governmental Accounting Standards Board (GASB) No. 67 and No. 68 valuation report presents the results of the June 30, 2019 annual accounting valuation of the Maryland State Retirement and Pension System (MSRPS). The purpose of the annual accounting valuations is as follows:

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

The accounting valuation results for the year ended June 30, 2019 are presented in a separate report.

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 30, 2019 valuation reflects the adoption of the assumptions recommended from that analysis. 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).

SUMMARY OF VALUATION RESULTS
JUNE 30, 2019
($ IN MILLIONS)
(STATE AND MUNICIPAL)

	2019							2018	
	TCS	ECS	State Police	Judges	LEOPS	CORS[1]	Total	Total	% Change
A. Demographic Information									
1. Active Number Counts	107,782	81,217	1,364	315	2,683	97	193,458	192,431	0.5%
2. Active Payroll	$ 7,153	$ 4,410	$ 107	$ 49	$ 181	$ 6	$ 11,905	$ 11,566	2.9%
3. Retired Number Counts	79,151	80,712	2,505	431	2,053	40	164,892	160,374	2.8%
4. Annual Benefits for Retired Members[2]	$ 2,287	$ 1,455	$ 129	$ 35	$ 75	$ 1	$ 3,982	$ 3,791	5.0%
5. Deferred / Inactive Number Counts	24,474	25,361	89	8	311	3	50,246	52,301	-3.9%
6. Total Number Counts	211,407	187,290	3,958	754	5,047	140	408,596	405,106	0.9%
B. Assets									
1. Market Value (MV)	$ 32,803	$ 18,070	$ 1,510	$ 490	$ 1,045	$ 26	$ 53,943	$ 51,827	4.1%
[3] 2. Rate of Return on MV							6.42 %	8.05 %	
3. Actuarial Value (AV)	$ 33,060	$ 18,207	$ 1,522	$ 494	$ 1,052	$ 26	$ 54,362	$ 52,587	3.4%
4. Rate of Return on AV							5.67 %	6.83 %	
5. Ratio of AV to MV							100.8%	101.5%	
C. Actuarial Results									
1. Normal Cost as a % of Payroll	11.33%	10.11%	32.99%	37.39%	23.47%	12.46%	11.37%	11.40%	
2. Actuarial Accrued Liability (AAL)									
a. Active	$ 17,469	$ 9,169	$ 507	$ 170	$ 545	$ 12	$ 27,872	$ 27,234	2.3%
b. Retired	24,800	16,393	1,780	387	1,044	15	44,420	43,237	2.7%
c. Deferred/Inactive	1,104	1,080	13	3	34	0	2,235	2,105	6.2%
d. Total	$ 43,372	$ 26,641	$ 2,301	$ 560	$ 1,623	$ 28	$ 74,526	$ 72,575	2.7%
3. Unfunded AAL (UAAL)	$ 10,312	$ 8,434	$ 779	$ 66	$ 571	$ 2	$ 20,164	$ 19,988	0.9%
4. Funded Ratio	76.22 %	68.34 %	66.16 %	88.17 %	64.83 %	92.49 %	72.94 %	72.46 %	

D. Contribution Rates[4]

	STATE PORTION ONLY							
	FY 2021						FY 2020	FY 2019
	TCS	ECS	State Police	Judges	LEOPS	Total	Total	Total
1. Pension Contributions								
a. Employer Normal Cost	4.33%	3.74%	24.99%	30.66%	16.65%	4.61%	4.65%	4.66%
b. Member Contribution Rate	7.00%	6.74%	8.00%	6.73%	7.00%	6.93%	6.93%	6.93%
c. UAAL Contribution Rate	10.63%	16.97%	53.10%	9.61%	26.31%	13.14%	13.17%	12.76%
d. Total	21.96%	27.45%	86.09%	47.00%	49.96%	24.68%	24.75%	24.35%
2. Total Actuarial Employer Rate (1.a + 1.c)	14.96%	20.71%	78.09%	40.27%	42.96%	17.75%	17.82%	17.42%
3. Total Employer Budgeted Rate								
a. Employer Budgeted Rate	14.96%	20.71%	78.09%	40.27%	42.96%	17.75%	17.82%	17.42%
b. Reinvested Savings Rate	0.69%	0.65%	0.94%	0.00%	0.97%	0.71%	0.72%	0.73%
c. Total Employer Budgeted Rate	15.65%	21.36%	79.03%	40.27%	43.93%	18.46%	18.54%	18.15%

[1]Includes CORS Municipal only. State CORS included in ECS.
[2]Retiree benefit amounts include the cost-of-living-adjustment granted July 1, 2019 and July 1, 2018, respectively.
[3]Actuarial estimation method used is expected to produce results that differ modestly from figures reported by State Street.
[4]Contribution rates shown in the "Total" column are for informational purposes only and are not used for funding purposes.
Totals may not add due to rounding.

ACTUARY'S COMMENTS

For the year ended June 30, 2019, the System's assets earned 6.42% based on our estimate and 6.46% as reported by State Street (using a slightly different computation method) on a market value basis and 5.67% on a smoothed or actuarial value basis. The smoothed rate of return is less than the 7.45% assumed rate of investment return. Recognized asset losses from fiscal years 2015, 2016, and 2019 offset recognized asset gains from fiscal years 2017 and 2018 in the actuarial value of assets as of June 30, 2019. This resulted in a loss under the asset smoothing method.

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

	Municipal	State	Total SRPS
Unfunded Actuarial Accrued Liability (UAAL) as of June 30, 2018	$ 950	$ 19,038	$19,988
Expected UAAL as of June 30, 2019 before changes	947	18,973	19,920
Changes in methods and assumptions	75	(754)	(679)
Expected UAAL as of June 30, 2019 after changes	1,022	18,219	19,241
Actual UAAL as of June 30, 2019	1,111	19,053	20,164
Net actuarial gain/(loss)	(89)	(834)	(923)
Actuarial gain/(loss) by source			
Actuarial investment experience	(80)	(847)	(927)
Actuarial accrued liability experience	(9)	13	4

Totals may not add due to rounding

Changes in assumptions included adopting the assumptions pursuant to the 2014-2018 Experience Study.

In relative terms, the overall System funded ratio of actuarial value of assets to liabilities increased from 72.46% in 2018 to **72.94%** this year. If market value of assets were the basis for the measurements, the funded ratio would have increased from 70.00% to 72.38% funded.

The market value of assets exceeds the retiree liabilities by about 21% in total (or 2.8% if accumulated member contributions of about $8.3 billion are netted out), an increase from 20% last year. This is referred to as a short condition test and is demonstrated in the chart at the bottom of this page. It is looking at the current retiree liabilities as the benefits that will be paid the soonest since these benefits are already in pay status. Active liabilities and deferred vested liabilities do not have associated immediate cash flow requirements. Although the market value of assets exceeds the current retiree liabilities in total, this is not true for one of the smaller systems. For State Police, the market value of assets is less than the retiree liabilities.

Summary of Contribution Rates by State System ($ in Millions)

	TCS	ECS	State Police	Judges	LEOPS	CORS	Total
Fair Value of Assets (FVA)	$32,803	$18,070	$ 1,510	$ 490	$ 1,045	$ 26	$53,943
Retiree Liability	24,800	16,393	1,780	387	1,044	15	44,420
FVA as % of Retiree Liability	132%	110%	85%	127%	100%	165%	121%

In the 2013 legislative session, the Legislature changed the method used to fund the State Systems of the MSRPS. The unfunded liability for each State System is being amortized over a single closed 25-year period beginning July 1, 2014 and ending June 30, 2039 (19 years remaining as of the June 30, 2019 valuation, which determines the fiscal year 2021 contribution). In addition, the corridor method used by the Teachers' Combined System and the State portion of the

Employees' Combined System, which was established in 2001, was being phased-out over a 10-year period. In 2015, the Legislature removed the corridor funding method effective with the June 30, 2015 valuation.

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

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

In 2011, the General Assembly enacted pension reforms which were effective July 1, 2011, and affected both current actives and new hires. The member contribution rate was increased for members of the Teachers' Pension System and Employees' Pension System from 5% to 7%. The member contribution rate was increased from 4% to 7% for LEOPS. In addition, the benefit attributable to service on or after July 1, 2011 is subject to cost-of-living adjustments (COLAs) that are based on the increase in the Consumer Price Index and capped at 2.5% or 1.0%. The cap is 2.5% if market value investment return from the preceding calendar year was higher or lower than the investment return assumption used in the valuation (currently 7.45%), and 1.0% otherwise. There were also that affected only those members hired on or after July 1, 2011.

In addition to the benefit provision changes, a portion of the savings from the pension reforms is to be reinvested in certain State Systems (TCS, ECS, State Police, and LEOPS). Reinvested savings of $191 million was contributed in fiscal year 2013. Legislation enacted in 2014 changed the amount of reinvested savings from $300 million each year beginning in fiscal year 2014 to $100 million each year for fiscal years 2014 and 2015, $150 million for fiscal year 2016, $200 million for fiscal year 2017, $250 million for fiscal year 2018, $300 million each year beginning in fiscal year 2019 and thereafter. The $300 million would then continue until the later of the combined funded ratio of the Systems reaching 85%, and the corridor funding method being fully phased-out. Legislation enacted in 2015 further reduced the amount of reinvested savings to $75 million per year beginning in fiscal year 2016 until the combined funded ratio of the Systems reaches 85% at which point the reinvestment ceases. The allocation of reinvested savings by System is in proportion to the savings from the pension reforms as measured in the actuarial valuation as of June 30, 2011.

The actuarially determined rates are equal to the employer normal cost plus the Unfunded Actuarial Accrued Liability contribution rate. The unfunded actuarial contribution rate is equal to the payment resulting from amortizing the remaining unfunded liability as a level percentage of pay over a single 25-year closed period beginning July 1, 2014 and ending June 30, 2039 (19 years remaining as of the June 30, 2019 valuation).

The fiscal year 2021 budgeted rates for TCS, ECS, State Police, and LEOPS are equal to the actuarially determined rate. The budgeted rates with reinvested savings are based on a projection of payroll. It is our understanding that the Retirement Agency will monitor contributions to ensure that the System receives the proper amount of reinvested dollar savings during fiscal year 2021. The fiscal year 2021 budgeted rate for Judges is equal to the actuarially determined contribution rate.

Beginning in fiscal year 2013, local employers contributed toward the normal cost for the Teachers Combined System. The required portion of normal cost contribution amounts for local employers for fiscal years 2013 through 2016 was defined by the Maryland statutes. Beginning in fiscal year 2017, local employers contribute the full normal cost contribution on behalf of their employees.

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

OTHER OBSERVATIONS

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

Given the System's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the System earning 7.40% on the actuarial value of assets), it is expected that:

1. The employer normal cost as a percentage of pay will decrease to the level of the Reformed Benefit Plan's (i.e., plans for members hired after July 1, 2011) normal cost as time passes and the active population is comprised entirely of Reformed Plan members,
2. The unfunded actuarial accrued liabilities will be fully amortized after 19 years (June 30, 2039), and
3. The funded status of the plan will increase gradually towards a 100% funded ratio.

Limitations of Funded Status Measurements

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

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

PRIOR YEAR ASSET EXPERIENCE

Assets (State and Municipal)

Plan assets for this System are measured on both a market value and an actuarial or smoothed value basis. The actuarial smoothing method, described again on page Appendix A-17, annually recognizes 20% of the difference between (a) the expected investment return if the market value of assets had earned the assumed rate of 7.45% during FY 2019, and (b) the actual investment return. Bear in mind that the expected return for this purpose is based on the assumed return from the prior year's actuarial valuation. In addition, there is a market value collar that constrains the actuarial value to be within 20% of the market value of assets. In periods of high returns, this method defers the amount of asset gains above the assumed return (7.45%). Conversely, in periods of returns below the assumed rate, recognition of the losses is deferred. This method limits the effect of temporary asset value fluctuations on contribution rates. The System does not immediately feel the full impact of lower (or higher) costs when asset values fluctuate dramatically.

For the year ended June 30, 2019, the System's assets earned **6.42%** based on our estimate and **6.46%** as reported by State Street (using a slightly different computation method) on a market value basis and **5.67%** on an actuarial value basis. The System experienced an investment loss of **$530** million on a market value basis and a loss of **$927** million on an actuarial basis. More detail can be found in Section III. Reconciliations of market value and actuarial value of assets are presented below:

(STATE AND MUNICIPAL)

TRENDS (STATE AND MUNICIPAL)

Item (In Millions)	**Market Value**	**Actuarial Value**
June 30, 2018 Value	$ 51,827	$ 52,586
June 30, 2018 Municipal Withdrawals / New Entrants	-	-
Employer Contributions	2,054	2,054
Member Contributions	807	807
Benefit Payments and Other Disbursements	(4,033)	(4,033)
Expected Investment Earnings (7.45% in FY2019)	3,818	3,875
Expected Value June 30, 2019	$ 54,473	$ 55,289
Investment Gain/(Loss)	**(530)**	**(927)**
June 30, 2019 Value	$ 53,943	$ 54,362
Figures may not add correctly due to rounding		

One of the best ways to measure or evaluate the financial condition of a pension plan is to examine the historical trends that are evolving. Below are three charts which illustrate trend information from 1993 through the end of 2019, on the System's assets and liabilities, annual cash flows in and out of the fund, and the State contribution rate. Our comments on each follow.

Chart A:
Assets/Liabilities

Chart A: Assets/Liabilities

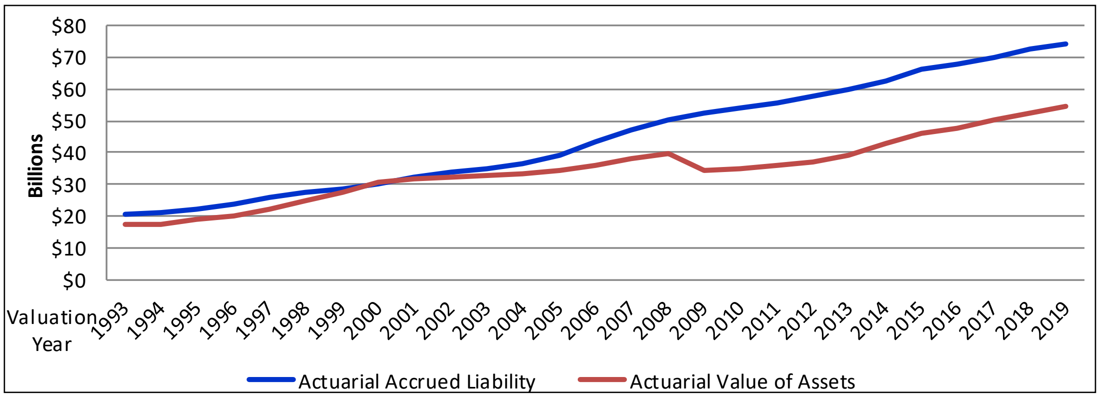


Chart B:
Benefits vs Contributions

Chart B: Benefits vs. Contributions

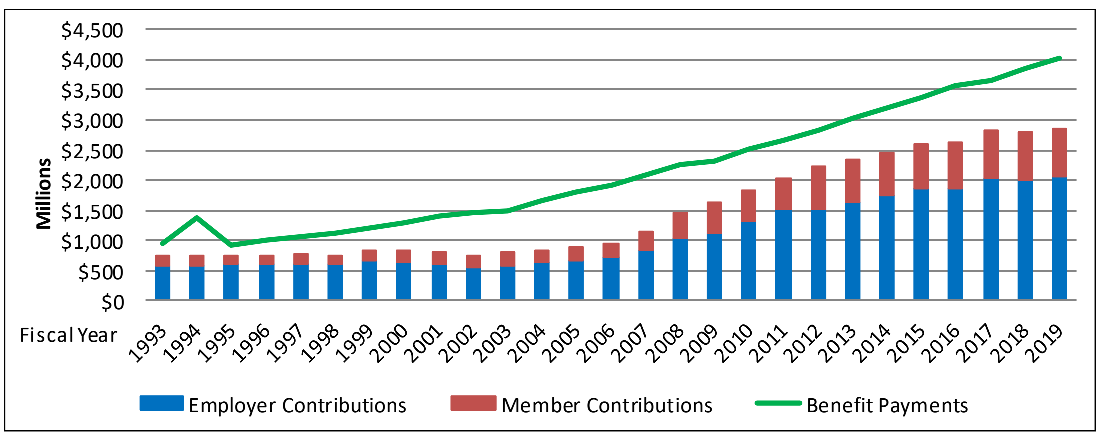
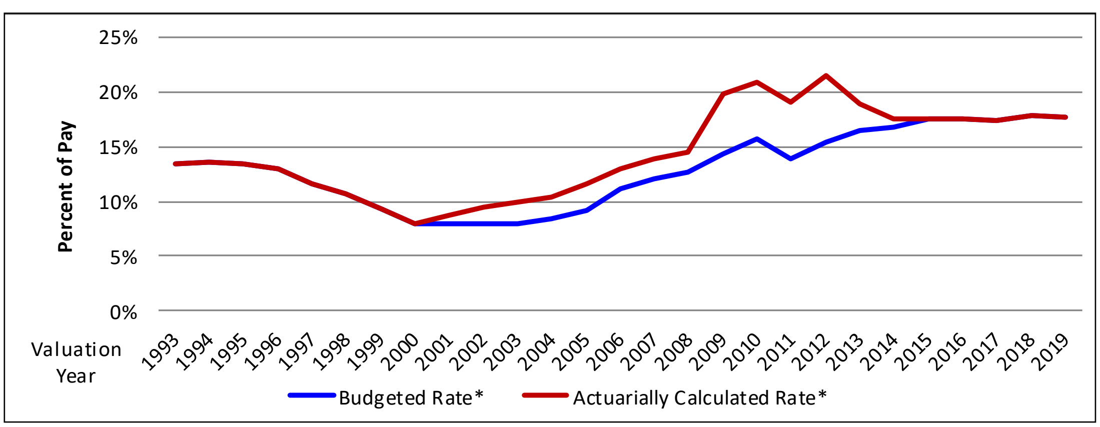


Chart C:
State Contribution Rate

Chart C: State Contributions Rate



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

Chart A displays a comparison of the actuarial value of assets and the Actuarial Accrued Liability (AAL). The difference between the actuarial value of assets and the AAL is the Unfunded Actuarial Accrued Liability. The Unfunded Actuarial Accrued Liability is about $20 billion as of June 30, 2019, and increased by about $176 million since the last valuation as of June 30, 2018. As of June 30, 2019, the actuarial value of assets under the five-year asset smoothing method is 101% of the market value of assets, compared with 101% as of June 30, 2018.

Chart B presents non-investment cash flow trend information that can have investment implications. With the aging and retirements of the baby boom generation, MSRPS has seen increases in payments to retirees. This is expected for mature retirement systems such as MSRPS. Benefit payments, which are the total amount below the green line, exceeds the total contributions, which is the total amount below the top of the red bar. The amount needed to pay the excess of benefit payments over total contributions comes from either investment return or liquidation of current assets. If the difference between the total benefit payments and total contributions increases, a larger portion of investment return will be needed to pay benefits and may require a change in asset allocation. The corridor method increased the extent of negative cash flows. The corridor funding method was eliminated first effective with the June 30, 2015 valuation. The budgeted rates have been equal to the actuarial rates since fiscal year 2017.

Finally, **Chart C** looks at the composite actuarially determined and budgeted State contribution rates. The budgeted contribution rates by System determine the fiscal year State appropriation. It shows the impact of the 1990s sustained investment gains and a continuous lowering of the rate until 2000. Effective with the 2001 valuation, the State appropriations were performed under a corridor funding method for the two largest plans, TCS and ECS. The appropriation remained essentially level for a few years before increasing with the 2004 valuation. Legislation enacted in 2015 removed the corridor funding method for TCS and ECS beginning with the valuation as of June 30, 2015. The budgeted rate is now equal to the actuarial rate for TCS and ECS.

Chart C further illustrates that the corridor method consistently acted to reduce the State's contributions calculated in valuations between 2001 and 2015.

SUMMARY OF UNFUNDED ACTUARIAL
(STATE AND

Valuation Date June 30,	Actuarial Liabilities For Active Member Contributions	Retirees, Term Vested and Inactives	Active Members Employer Fin. Portion	Total Liabilities	Actuarial Value of Assets
2010	$ 3,389,265,622	$ 9,900,015,751	$ 20,795,799,745	$ 54,085,081,118	$ 34,688,345,696
2011	3,732,934,034	31,901,090,890	20,283,517,888	55,917,542,812	36,177,655,993
2012	4,274,269,025	34,208,190,190	19,386,686,257	57,869,145,472	37,248,400,780
2013	4,818,674,217	36,001,888,558	19,239,528,603	60,060,091,378	39,350,969,353
2014	5,369,806,786	37,679,277,545	19,561,109,243	62,610,193,574	42,996,956,526
2015	5,908,597,531	40,321,760,550	20,051,422,798	66,281,780,879	46,170,624,066
2016	6,437,712,138	41,640,894,712	19,703,317,255	67,781,924,105	47,803,679,296
2017	7,023,662,251	43,117,075,812	19,845,837,454	69,986,575,517	50,250,464,717
2018	7,557,858,673	45,341,184,229	19,675,645,860	72,574,688,762	52,586,527,740
2019	8,142,516,497	46,654,221,664	19,729,262,120	74,526,000,281	54,361,969,141

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

Fiscal Year Ended	Added to Rolls Number	Added to Rolls Annual Allowance	Removed from Rolls Number	Removed from Rolls Annual Allowances	Rolls-End of Year Number	Rolls-End of Year Annual Allowances	% Increase in Annual Allowances	Average Annual Allowance
2010	6,908	$ 147,419,991	2,668	$ 50,510,952	120,247	$ 2,434,890,574	4.14%	$ 20,249
2011	8,639	226,843,465	1,715	55,062,716	127,171	2,606,671,323	7.05%	20,497
2012	7,936	264,562,994	2,614	58,769,603	132,493	2,812,464,714	7.89%	21,227
2013	7,874	238,239,133	2,442	62,081,371	137,925	2,988,622,476	6.26%	21,668
2014	7,698	217,542,920	2,736	58,512,733	142,887	3,147,652,663	5.32%	22,029
2015	8,459	239,724,802	3,496	64,129,306	147,850	3,323,248,158	5.58%	22,477
2016	8,243	201,205,015	3,527	75,486,723	152,566	3,448,966,450	3.87%	22,606
2017	7,384	211,608,686	3,584	73,321,980	156,366	3,587,253,156	4.01%	22,941
2018	8,105	268,295,042	4,097	64,344,782	160,374	3,791,203,416	5.69%	23,640
2019	7,484	260,126,211	2,966	69,487,028	164,892	3,981,842,599	5.03%	24,148

Notes: Members added to rolls were estimated based on a retirement date/change date after June 30, 2018.
Annual allowances added to rolls include COLA increases for continuing members.
COLA increases were estimated based on the benefits for the continuing members.

LIABILITIES / SOLVENCY TEST

MUNICIPAL)

Ratio of Assets to Actuarial Liabilities						
Active Member Contributions	**Retirees Term Vested and Inactives**	**Active Members Employer Fin. Portion**	**Funded Ratio (Assets/Liab. Coverage)**	**Unfunded Actuarial Accrued Liability (UAAL)**	**Covered Payroll**	**UAAL as % of Covered Payroll**
100.00%	100.00%	6.73%	64.14%	$ 19,396,735,421	$ 10,657,943,561	182%
100.00%	100.00%	2.68%	64.70%	19,739,886,819	10,478,799,565	188%
100.00%	96.39%	0.00%	64.37%	20,620,744,692	10,336,536,835	199%
100.00%	95.92%	0.00%	65.52%	20,709,122,025	10,477,544,241	198%
100.00%	99.86%	0.00%	68.67%	19,613,237,049	10,803,632,045	182%
100.00%	99.85%	0.00%	69.66%	20,111,156,814	11,063,961,664	182%
100.00%	99.34%	0.00%	70.53%	19,978,224,809	11,155,923,517	179%
100.00%	100.00%	0.55%	71.80%	19,736,110,801	11,418,973,317	173%
100.00%	99.31%	0.00%	72.46%	19,988,161,021	11,566,219,797	173%
100.00%	99.07%	0.00%	72.94%	20,164,031,140	11,905,463,225	169%

MARYLAND STATE RETIREMENT
ACCOUNTING STATEMENT
AS OF
(STATE AND

	Teachers' Combined System	Employees' Combined System
1. Actuarial Accrued Liability:		
a. Employee Contributions	$ 5,121,059,848	$ 2,772,423,411
b. Retirees, Term. Vesteds & Inactives	25,903,857,488	17,472,809,063
c. Active Members	12,347,519,908	6,396,134,731
2. Total Actuarial Accrued Liability (1(a) + 1(b) + 1(c))	$43,372,437,244	$26,641,367,205
3. Actuarial Value of Assets	33,060,345,745	18,207,410,442
4. Unfunded Actuarial Accrued Liability: (2-3)	$10,312,091,499	$ 8,433,956,763
5. Funded Ratio	76.22%	68.34%
6. Annual Payroll	$ 7,153,063,434	$ 4,409,940,761
7. UAAL as % of Payroll	144%	191%

AND PENSION SYSTEM
INFORMATION
JUNE 30, 2019
MUNICIPAL)

State Police	Judges	LEOPS	CORS	Total MSRPS
$ 99,223,797	$ 32,510,410	$ 114,687,528	$ 2,611,503	$ 8,142,516,497
1,793,517,164	390,544,130	1,077,859,224	15,634,595	46,654,221,664
408,191,769	137,255,891	430,586,275	9,573,546	19,729,262,120
$2,300,932,730	$560,310,431	$1,623,133,027	$ 27,819,644	$74,526,000,281
1,522,238,564	494,038,020	1,052,204,643	25,731,728	54,361,969,141
$ 778,694,166	$ 66,272,411	$ 570,928,384	$ 2,087,916	$20,164,031,140
66.16%	88.17%	64.83%	92.49%	72.94%
$ 106,977,874	$ 48,934,800	$ 180,963,077	$ 5,583,279	$11,905,463,225
728%	135%	315%	37%	169%

REPORT OF THE ACTUARY ON THE VALUATION OF THE TEACHERS' COMBINED SYSTEM OF THE STATE OF MARYLAND

Summary of Principal Plan Results

	Actuarial Valuation Performed		
	June 30, 2019 (for FY2020)	**June 30, 2018 (for FY2019)**	**% Change**
A. Demographic Information			
Active Number Count	107,782	106,846	0.9%
Retired Member and Beneficiary Count	79,151	77,201	2.5%
Vested Former Member Count	24,474	25,188	-2.8%
Total Number Count	211,407	209,235	1.0%
Active Payroll	$ 7,153,063,434	$ 6,941,096,601	3.1%
Annual Benefits for Retired Members	$ 2,287,252,060	$ 2,189,605,461	4.5%
B. Actuarial Results			
Actuarial Accrued Liability	$ 43,372,437,244	$ 42,739,561,732	1.5%
Actuarial Value of Assets	33,060,345,745	31,945,910,198	3.5%
Unfunded Actuarial Accrued Liability (UAAL)	$ 10,312,091,499	$ 10,793,651,534	-4.5%
Funded Ratio	76.22%	74.75%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	4.33%	4.38%	
UAAL Amortization Rate	10.63%	11.21%	
Total Actuarial Employer Contribution Rate	14.96%	15.59%	

REPORT OF THE ACTUARY ON THE VALUATION OF THE EMPLOYEES' COMBINED SYSTEM OF THE STATE OF MARYLAND

(STATE AND MUNICIPAL)

Summary of Principal Plan Results

	Actuarial Valuation Performed		
	June 30, 2019 (for FY2020)	**June 30, 2018 (for FY2019)**	**% Change**
A. Demographic Information			
Active Number Count	81,217	81,208	-1.1%
Retired Member and Beneficiary Count	80,712	78,287	3.1%
Vested Former Member Count	25,361	26,698	-3.7%
Total Number Count	187,290	186,193	0.2%
Active Payroll	$ 4,409,940,761	$ 4,301,247,490	-0.4%
Annual Benefits for Retired Members	$ 1,454,885,857	$ 1,373,595,058	7.2%
B. Actuarial Results			
Actuarial Accrued Liability	$ 26,641,367,205	$ 25,462,496,831	3.6%
Actuarial Value of Assets	18,207,410,422	17,679,879,601	4.4%
Unfunded Actuarial Accrued Liability (UAAL)	$ 8,433,956,763	$ 7,782,617,230	1.9%
Funded Ratio	68.34%	69.43%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	3.74%	3.85%	
UAAL Amortization Rate	16.97%	15.71%	
Total Actuarial Employer Contribution Rate	20.71%	19.56%	

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

Summary of Principal Plan Results

	June 30, 2019 (for FY2020)	June 30, 2018 (for FY2019)	% Change
A. Demographic Information			
Active Number Count	1,364	1,347	1.3%
Retired Member and Beneficiary Count	2,505	2,477	1.1%
Vested Former Member Count	89	99	-10.1%
Total Number Count	3,958	3,923	0.9%
Active Payroll	$ 106,977,874	$ 100,324,842	6.6%
Annual Benefits for Retired Members	$ 128,577,798	$ 123,862,208	3.8%
B. Actuarial Results			
Actuarial Accrued Liability	$ 2,300,932,760	$ 2,250,698,919	2.2%
Actuarial Value of Assets	$ 1,522,238,564	1,468,640,940	3.6%
Unfunded Actuarial Accrued Liability (UAAL)	$ 778,694,166	$ 782,057,979	-0.4%
Funded Ratio	66.16%	65.25%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	24.99%	24.04%	
UAAL Amortization Rate	53.10%	55.54%	
Total Actuarial Employer Contribution Rate	78.09%	79.58%	

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

Summary of Principal Plan Results

	June 30, 2019 (for FY2020)	June 30, 2018 (for FY2019)	% Change
A. Demographic Information			
Active Number Count	315	316	-0.3%
Retired Member and Beneficiary Count	431	421	2.4%
Vested Former Member Count	8	9	-11.1%
Total Number Count	754	746	1.1%
Active Payroll	$ 48,934,800	$ 47,498,152	3.0%
Annual Benefits for Retired Members	$ 35,371,231	$ 33,319,561	6.2%
B. Actuarial Results			
Actuarial Accrued Liability	$ 560,310,431	$ 556,746,430	0.6%
Actuarial Value of Assets	494,038,020	477,005,959	3.6%
Unfunded Actuarial Accrued Liability (UAAL)	$66,272,411	$ 79,740,471	-16.9%
Funded Ratio	88.17%	85.68%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	30.66%	32.49%	
UAAL Amortization Rate	9.61%	11.95%	
Total Actuarial Employer Contribution Rate	40.27%	44.44%	

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

Summary of Principal Plan Results

	June 30, 2019 (for FY2020)	June 30, 2018 (for FY2019)	% Change
A. Demographic Information			
Active Number Count	2,683	2,617	2.5%
Retired Member and Beneficiary Count	2,053	1,954	5.1%
Vested Former Member Count	311	305	2.0%
Total Number Count	5,047	4,876	3.5%
Active Payroll	$ 180,963,077	$ 170,555,081	6.1%
Annual Benefits for Retired Members	$ 74,686,123	$ 69,878,318	6.9%
B. Actuarial Results			
Actuarial Accrued Liability	$ 1,623,133,027	$ 1,539,168,329	5.5%
Actuarial Value of Assets	1,052,204,634	990,564,212	6.2%
Unfunded Actuarial Accrued Liability (UAAL)	$ 570,928,384	$ 548,604,117	4.1%
Funded Ratio	64.83%	64.36%	
C. Contribution Rates (State Portion Only)			
Employer Normal Cost Rate	16.65%	15.07%	
UAAL Amortization Rate	26.31%	26.30%	
Total Actuarial Employer Contribution Rate	42.96%	41.37%	

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

Summary of Principal Plan Results

	June 30, 2019 (for FY2020)	June 30, 2018 (for FY2019)	% Change
A. Demographic Information			
Active Number Count	97	97	0.0%
Retired Member and Beneficiary Count	40	34	17.6%
Vested Former Member Count	3	2	100.0%
Total Number Count	140	133	5.3%
Active Payroll	$ 5,583,279	$ 5,497,631	1.6%
Annual Benefits for Retired Members	$ 1,069,529	$ 942,809	13.4%
B. Actuarial Results			
Actuarial Accrued Liability	$ 27,819,644	$ 26,016,521	6.9%
Actuarial Value of Assets	25,731,728	24,526,829	4.9%
Unfunded Actuarial Accrued Liability (UAAL)	$ 2,087,916	$ 1,489,692	40.2%
Funded Ratio	92.49%	94.27%	

SCHEDULE OF ACTIVE MEMBERSHIP VALUATION DATA BY PLAN

Teachers' Retirement

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2010	3,111	$ 269,775,400	$ 86,717	0.68 %
2011	2,589	225,118,122	86,952	0.27
2012	2,040	178,541,246	87,520	-0.65
2013	1,630	145,207,003	89,084	1.79
2014	1,276	116,356,416	91,188	2.36
2015	986	91,396,562	92,694	1.65
2016	724	68,494,031	94,605	2.06
2017	537	51,836,368	96,530	2.03
2018	418	41,497,070	99,275	2.84
2019	334	33,972,615	101,714	2.46

Teachers' Pension

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2010	103,162	$ 5,984,872,410	$ 58,014	1.03 %
2011	102,939	5,971,858,330	58,014	0.00
2012	101,654	5,902,062,066	58,060	0.08
2013	102,398	6,039,968,791	58,985	1.59
2014	103,194	6,193,896,978	60,022	1.76
2015	104,540	6,379,309,714	61,023	1.67
2016	104,823	6,542,543,808	62,415	2.28
2017	105,765	6,729,001,984	63,622	1.93
2018	106,428	6,899,599,531	64,829	1.90
2019	107,448	7,119,090,819	66,256	2.20

Employees' Retirement

(State and Municipal)

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2010	9,665	$ 463,375,639	$ 47,944	-1.29 %
2011	9,189	432,469,190	47,064	-1.84
2012	9,113	421,320,077	46,233	-1.77
2013	8,976	417,020,134	46,459	0.49
2014	8,741	423,960,682	48,503	4.40
2015	8,566	429,223,262	50,108	3.31
2016	7,923	395,490,050	49,917	-0.38
2017	7,632	389,389,294	51,021	2.21
2018	7,725	397,640,605	51,475	0.89
2019	8,119	419,453,514	51,663	0.37

SCHEDULE OF ACTIVE MEMBERSHIP VALUATION DATA BY PLAN
(continued)

Employees' Pension
(State and Municipal)

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2010	77,660	$ 3,674,098,155	$ 47,310	-0.22 %
2011	76,264	3,595,340,448	47,143	-0.35
2012	76,061	3,577,154,799	47,030	-0.24
2013	75,701	3,613,240,787	47,730	1.49
2014	76,084	3,791,019,971	49,827	4.39
2015	75,228	3,871,524,469	51,464	3.29
2016	74,702	3,849,843,225	51,536	0.14
2017	74,455	3,929,663,604	52,779	2.41
2018	73,483	3,903,606,885	53,123	0.65
2019	73,098	3,990,487,247	54,591	2.77

Judges' Retirement

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2010	294	$ 39,960,883	$ 135,921	0.25 %
2011	286	38,810,261	135,700	-0.16
2012	294	39,955,368	135,903	0.15
2013	288	40,000,518	138,891	2.20
2014	301	42,313,395	140,576	1.21
2015	307	44,612,624	145,318	3.37
2016	298	44,711,221	150,038	3.25
2017	312	46,875,642	150,242	0.14
2018	316	47,498,152	150,311	0.05
2019	315	48,934,800	155,349	3.35

State Police Retirement

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2010	1,354	$ 81,705,369	$ 59,946	0.71 %
2011	1,295	75,551,283	58,341	-3.32
2012	1,332	77,689,914	58,326	-0.03
2013	1,320	79,848,029	60,491	3.71
2014	1,351	85,660,006	63,405	4.82
2015	1,394	91,049,875	65,316	3.01
2016	1,402	93,490,648	66,684	2.09
2017	1,371	100,384,047	73,220	9.80
2018	1,347	100,324,842	74,480	1.72
2019	1,364	106,977,874	78,430	5.30

SCHEDULE OF ACTIVE MEMBERSHIP VALUATION DATA BY PLAN

(continued)

Law Enforcement Officers' Pension

(STATE AND MUNICIPAL)

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2010	2,474	$ 140,199,243	$ 56,669	-1.08 %
2011	2,411	135,176,780	56,067	-1.06
2012	2,410	135,185,336	56,094	0.05
2013	2,407	137,612,972	57,172	1.92
2014	2,484	145,672,538	58,644	2.58
2015	2,488	151,955,067	61,075	4.15
2016	2,529	156,396,298	61,841	1.25
2017	2,574	166,560,857	64,709	4.64
2018	2,617	170,555,081	65,172	0.72
2019	2,683	180,963,077	67,448	3.49

Correctional Officers' Retirement System

(MUNICIPAL)

Valuation Date As of June 30,	Number	Annual Payroll	Annual Average Pay	% Increase Avg. Pay
2010	66	$ 3,956,462	$ 59,946	0.71 %
2011	86	4,475,151	52,037	-13.19
2012	90	4,628,029	51,423	-1.18
2013	90	4,646,007	51,622	0.39
2014	91	4,752,059	52,220	1.16
2015	91	4,890,091	53,737	2.90
2016	93	4,954,236	53,271	-0.87
2017	96	5,261,521	54,808	2.88
2018	97	5,497,631	56,677	3.41
2019	97	5,583,279	57,560	1.56

Statistical Section

STATISTICAL SECTION OVERVIEW

The Maryland State Retirement and Pension System (MSRPS) has implemented GASB Statement 44, Economic Condition Reporting: The Statistical Section. This statement establishes standardized reporting requirements relative to the supplementary information provided in this section in an effort to improve the understandability and usefulness of the information presented. GASB Statement 44 further states that the purpose of the Statistical Section is to provide historical perspective, context, and detail to assist readers in using the information in the financial statements and the notes to the financial statements to better understand and assess the System's overall economic condition. The schedules within the Statistical Section are classified into the following four categories: Financial Trends, Revenue Capacity, Demographic and Economic Information, and Operating Information.

The schedules beginning on page 125 show financial trend information to assist users in understanding and assessing how the MSRPS's financial position has changed over the past 10 years. The financial trend schedules presented are:

- Changes in Plan Net Position
- Benefits Expense by Type

The schedules beginning on page 126 show demographic and economic information and operating information. The demographic and economic information is intended to assist users in understanding the environment in which MSRPS operates. The operating information is intended to provide contextual information about MSRPS's operations to assist readers in using financial statement information. The demographic and economic information and the operating information presented include:

- Schedule of Average Benefit Payments .
- History of Funding Progress
- Contribution Rates by Plan
- Schedule of Retired Members by Type
- Schedule of Active Membership by Plan
- Schedule of Retirees and Beneficiaries by Plan
- Revenues by Source and Expenses by Type
- Revenues vs. Expenses
- Principal Participating Employers

TEN-YEAR HISTORY OF CHANGES IN PLAN NET POSITION
for the Years Ended June 30,
(Expressed in thousands)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Additions										
Employer contributions	$ 1,308,921	$ 1,512,472	$ 1,595,761	$ 1,643,101	$ 1,733,653	$ 1,858,612	$ 1,870,655	$2,036,596	$ 1,995,017	$ 2,054,091
Members contributions	535,581	528.028	703,256	710,856	727,726	755,444	764,414	782,686	791,583	807,291
Net Investment income	4,016,359	6,273,337	104,084	3,845,795	5,706,267	1,197,671	497,531	4,473,443	3,899,393	3,288,209
Total Additions	5,860,861	8,313,837	2,403,101	6,199,752	8,167,646	3,811,727	3,132,600	7,292,725	6,685,993	6,149,591
Deductions										
Benefit payments	2,445,540	2,580,392	2,755,106	2,950,700	3,121.823	3,284,550	3,469,493	3,577,123	3,744,132	3,926,220
Refunds	33,531	33,369	33,819	38,281	42,922	48,245	58,362	63,441	68,600	67,400
Administrative expenses	28,627	30,961	28,201	26,280	26,130	29,080	28,659	30,904	33,211	39,784
Total Deductions	2,507,698	2,644,722	2,817,126	3,015,261	3,190,875	3,361,875	3,556,514	3,671,468	3,845,943	4,033,404
Changes in Plan Net Positions	$ 3,353,162	$ 5,669,115	$ (414,025)	$ 3,184,491	$ 4,976,771	$ 449,852	$ (423,914)	$ 3,621,257	$ 2,840,050	$ 2,116,187

SCHEDULE OF BENEFIT EXPENSE BY TYPE
(Expressed In Thousands)

Fiscal Year	Age & Service Benefits		Death In Service Pre-Retirement Benefits	Disability Benefits			Death After Retirement Post-Retirement Benefits	Total
				Retirees				
	Retirees	Survivors		Accidental	Ordinary	Survivors		
2010	$ 2,045,795	$ 100,953	$ 18,857	$ 102,032	$ 161,836	$ 16,068	$ –	$ 2,445,541
2011	2,164,368	104,884	18,758	105,493	170,267	16,623	_	2,580,393
2012	2,318,614	109,674	19,232	109,996	179,914	17,677	_	2,755,107
2013	2,484,792	118,044	20,027	116,636	192,440	18,761	_	2,950,700
2014	2,633,852	124,807	20,514	120,829	202,147	19,672	_	3,121,823
2015	2,777,136	130,215	21,005	124,090	211,373	20,731	_	3,284,550
2016	2,937,077	138,467	21,592	128,518	221,849	21,990	_	3,469,493
2017	3,028,182	145,322	21,522	130,309	229,143	22,644	_	3,577,122
2018	3,175,588	152,066	21,655	133,671	237,539	23,612	_	3,744,132
2019	3,334,495	161,203	21,720	138,313	245,429	25,059	_	3,926,220

SCHEDULE OF REFUND EXPENSE BY TYPE
(Expressed in thousands)

Fiscal Year	Separation	Death	Misc.	Total
2010	$ 29,320	$ 4,029	$ 182	$ 33,531
2011	29,041	4,108	220	33,369
2012	29,521	4,142	156	33,819
2013	33,348	4,834	99	38,281
2014	36,835	5,955	132	42,922
2015	40,966	7,126	153	48,245
2016	51,372	6,869	120	58,362
2017	54,671	8,538	238	63,441
2018	59,108	9,315	177	68,600
2019	58,848	8,394	158	67,400

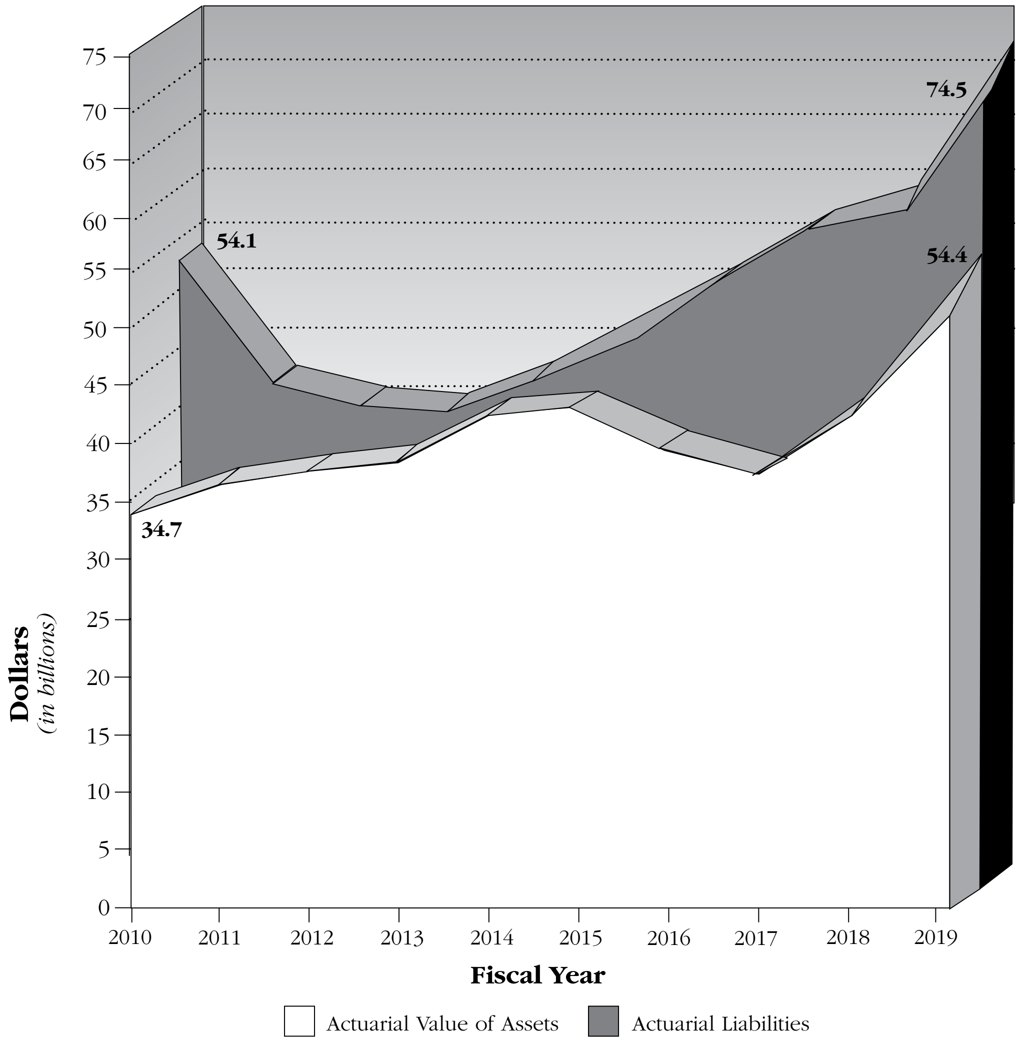
MARYLAND STATE RETIREMENT AND PENSION SYSTEM

TEN YEAR HISTORY OF AVERAGE BENEFIT PAYMENTS

Years Credited Service

	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30+
Period 7/1/2009 to 6/30/2010							
Average monthly benefit	$ 505	$ 542	$ 838	$ 1,246	$ 1,670	$ 1,971	$ 2,933
Monthly final average salary	$ 2,902	$ 3,425	$ 3,636	$ 4,392	$ 4,814	$ 5,097	$ 5,811
Number of retired members	271	834	662	690	873	698	2,266
Period 7/1/2010 to 6/30/2011							
Average monthly benefit	$ 435	$ 541	$ 851	$ 1,211	$ 1,800	$ 2,161	$ 3,100
Monthly final average salary	$ 2,884	$ 3,373	$ 3,734	$ 4,309	$ 4,984	$ 5,395	$ 5,970
Number of retired members	306	951	901	950	1,164	900	2,856
Period 7/1/2011 to 6/30/2012							
Average monthly benefit	$ 351	$ 437	$ 806	$ 1,296	$ 1,745	$ 2,175	$ 3,358
Monthly final average salary	$ 2,878	$ 3,483	$ 3,788	$ 4,645	$ 5,128	$ 5,520	$ 6,310
Number of retired members	254	931	844	817	989	837	2,662
Period 7/1/2012 to 6/30/2013							
Average monthly benefit	$ 435	$ 473	$ 802	$ 1,317	$ 1,712	$ 2,231	$ 3,297
Monthly final average salary	$ 2,810	$ 3,577	$ 3,907	$ 4,686	$ 5,028	$ 5,548	$ 6,217
Number of retired members	234	972	860	910	978	917	2,389
Period 7/1/2013 to 6/30/2014							
Average monthly benefit	$ 405	$ 472	$ 832	$ 1,324	$ 1,794	$ 2,234	$ 3,383
Monthly final average salary	$ 2,475	$ 3,508	$ 4,064	$ 4,699	$ 5,222	$ 5,673	$ 6,380
Number of retired members	218	918	873	964	910	938	2,304
Period 7/1/2014 to 6/30/2015							
Average monthly benefit	$ 454	$ 459	$ 888	$ 1,304	$ 1,804	$ 2,275	$ 3,246
Monthly final average salary	$ 2,338	$ 3,515	$ 4,139	$ 4,679	$ 5,124	$ 5,571	$ 6,134
Number of retired members	201	911	972	1,089	968	1,042	2,621
Period 7/1/2015 to 6/30/2016							
Average monthly benefit	$ 501	$ 472	$ 869	$ 1,367	$ 1,901	$ 2,366	$ 3,377
Monthly final average salary	$ 2,371	$ 3,407	$ 4,128	$ 4,773	$ 5,427	$ 5,786	$ 6,425
Number of retired members	219	918	934	1,118	953	1,016	2,423
Period 7/1/2016 to 6/30/2017							
Average monthly benefit	$ 576	$ 509	$ 864	$ 1,400	$ 1,943	$ 2,454	$ 3,479
Monthly final average salary	$ 2,199	$ 3,626	$ 4,110	$ 4,865	$ 5,389	$ 5,855	$ 6,563
Number of retired members	138	748	873	1,028	964	863	2,060
Period 7/1/2017 to 6/30/2018							
Average monthly benefit	$ 279	$ 520	$ 938	$ 1,476	$ 1,982	$ 2,626	$ 3,526
Monthly final average salary	$ 3,012	$ 3,482	$ 4,290	$ 4,934	$ 5,457	$ 6,046	$ 6,584
Number of retired members	87	704	925	1,200	1,084	964	2,428
Period 7/1/2018 to 6/30/2019							
Average monthly benefit	$ 311	$ 508	$ 950	$ 1,510	$ 2,028	$ 2,678	$ 3,597
Monthly final average salary	$ 3,082	$ 3,360	$ 4,243	$ 4,916	$ 5,460	$ 6,034	$ 6,580
Number of retired members	109	816	956	1,213	1,086	967	2,439

TEN-YEAR HISTORY OF FUNDING PROGRESS



TEN-YEAR HISTORY OF EMPLOYER CONTRIBUTION RATES BY PLAN

	State						Participating Governmental Units (PGU)			
Fiscal Year	Combined State Rate	Teachers' Combined Rate	Employees' Combined Rate	Judges' Retirement	State Police Retirement	Law Enforcement Officers' Pension	Law Enforcement Officers' Pension	Employees' Retirement	Employees' Pension	Correctional Officers' Retirement
* 2010	12.62%	13.15%	9.93%	49.89%	30.79%	38.63%	30.03%	9.05%	4.05%	8.41%
2011	14.33	14.34	11.69	59.07	57.03	47.67	32.74	12.30	7.30	9.69
2012	15.67	15.45	13.40	60.37	61.01	49.26	33.09	12.41	7.41	8.87
2013	13.85	13.29	12.29	61.18	61.21	46.81	28.71	10.46	5.46	7.96
2014	15.43	14.71	14.05	50.92	66.71	52.47	31.76	11.47	6.47	9.41
2015	16.41	15.47	15.53	42.74	83.06	41.37	30.45	11.20	6.20	11.43
2016	16.83	15.71	16.38	40.70	78.91	39.77	31.94	10.00	5.00	10.43
2017	17.58	15.79	18.28	46.56	81.40	39.60	31.18	9.64	4.64	9.81
2018	17.60	15.71	18.56	46.45	80.29	39.69	30.75	10.03	5.03	9.53
2019	17.42	15.43	18.58	44.53	78.41	39.78	31.43	10.47	5.47	9.85

*Rates for Municipal Systems only include basic employee cost rate.
Does not include reduction of $120 Million in contributions for State Systems due to 2011 General Assembly reforms.

SCHEDULE OF RETIRED MEMBERS BY TYPE
as of June 30, 2019

Amount of Monthly Benefit	Number of Retirees	Type of Retirement NR(1)	ER(2)	SP(3)	SPD(4)	ADR(5)	ODR(6)	SPDR(7)
1 - 300	18,910	16,583	837	940	15	9	289	237
301 - 600	16,349	11,425	2,294	1,105	41	25	1,072	387
601 - 900	14,307	8,842	2,503	981	81	34	1,533	333
901 - 1,200	13,327	8,053	2,312	891	87	85	1,648	251
1,201 - 1,500	12,453	7,783	1,868	871	98	196	1,405	232
1,501 - 1,800	11,951	8,006	1,519	727	70	285	1,202	142
1,801 - 2,100	10,684	7,320	1,258	567	67	332	1,057	83
2,101 - 2,400	9,956	7,039	1,069	472	48	391	877	60
2,401 - 2,700	9,057	6,558	874	420	60	399	697	49
2,701 - 3,000	7,917	5,922	706	322	52	361	529	25
Over 3,000	39,981	33,634	1,623	1,189	220	1,631	1,594	90
	164,892	121,165	16,863	8,485	839	3,748	11,903	1,889

Type of Retirement:

1 – Normal retirement for age and service
2 – Early retirement
3 – Survivor payment – normal or early retirement
4 – Survivor payment – death in service
5 – Accidental disability retirement
6 – Ordinary disability retirement
7 – Survivor payment – disability retirement

OF RETIREMENT AND OPTION SELECTED

#Option Selected							
MAX	**Opt. 1**	**Opt. 2**	**Opt. 3**	**Opt. 4**	**Opt. 5**	**Opt. 6**	**Opt. 7**
10,336	3,742	1,979	815	819	732	480	7
7,850	2,718	1,898	1,359	1,033	704	781	6
6,374	2,023	1,710	1,424	1,227	590	952	7
5,681	1,667	1,635	1,450	1,302	576	1,012	4
4,920	1,410	1,884	1,403	1,215	688	930	3
4,436	1,503	1,759	1,355	1,239	681	976	2
3,928	1,318	1,559	1,207	1,210	573	886	3
3,738	1,143	1,476	1,174	1,096	465	860	4
3,358	1,030	1,331	1,043	1,047	453	793	2
3,159	848	1,101	839	977	360	629	4
16,373	3,514	5,198	4,632	5,856	1,344	3,038	26
70,153	20,916	21,530	16,701	17,021	7,166	11,337	68

Option Selected:

Basic – The standard benefit if no option is selected. Generally, at retiree's death, all payments cease. However, the basic allowance for the State Police, Law Enforcement Offices (LEOPS), Judges and Legislators provides a continuing benefit for spouses or children under 18.

Opt. 1 – Guarantees return of the present value of the retirement benefit less the total payments already paid to the member.

Opt. 2 – Guarantees the same payment to the designated beneficiaries for their lifetime.

Opt. 3 – Guarantees one half the member's payment to the designated beneficiaries for their lifetime.

Opt. 4 – Guarantees return of the member's accumulated contributions and interest less the member's accumulated reserves already paid.

Opt. 5 – Guarantees the same payment to the designated beneficiaries for their lifetime, unless the beneficiaries predecease the respective members. Allowance then increases to the basic.

Opt. 6 – Guarantees one half the member's payment to the designated beneficiaries for their lifetime, unless the beneficiaries predecease the respective members. Allowance then increases to the basic.

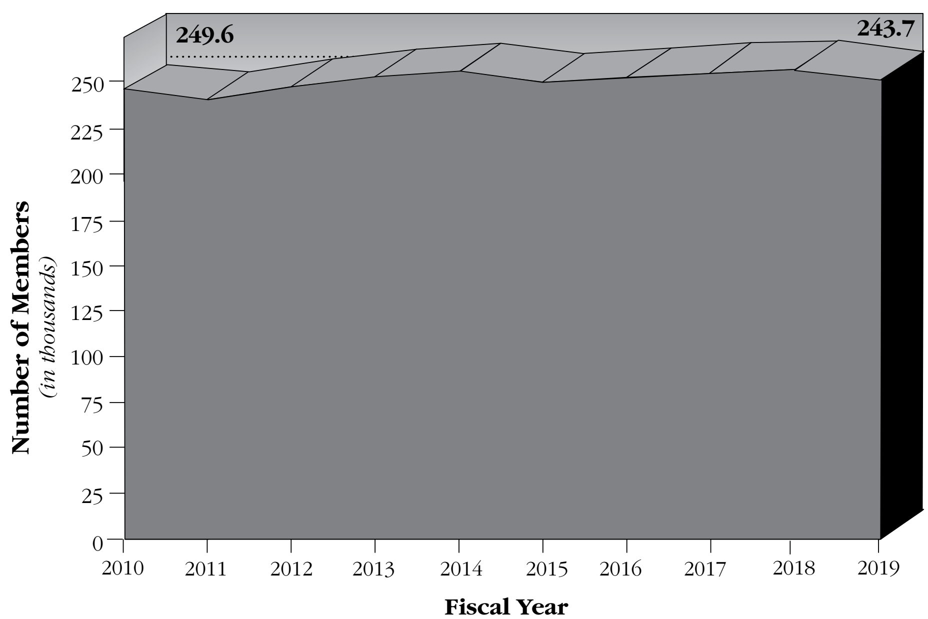
Opt. 7 – Special option calculation performed by actuary.

TEN-YEAR HISTORY OF MEMBERSHIP BY PLAN

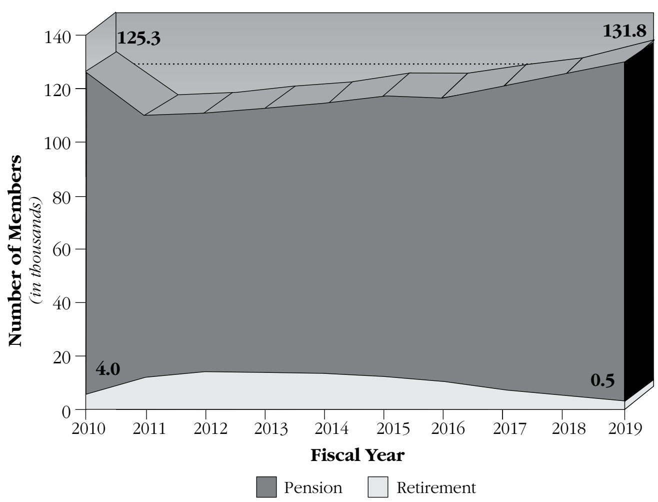
Fiscal Year	Total	Teachers' Retirement	Teachers' Pension	Employees' Retirement*	Employees' Pension	Judges' Retirement	State Police Retirement	Law Enforcement Officers' Pension	Local Correctional Officers' Retirement
2010	249,561	4,012	125,278	10,664	105,138	300	1,431	2,672	66
2011	245,970	3,339	124,806	10,139	103,292	297	1,386	2,625	86
2012	244,224	2,663	124,064	10,011	103,038	304	1,417	2,637	90
2013	244,362	2,154	125,429	9,865	102,463	298	1,404	2,658	91
2014	245,655	1,718	126,972	9,572	102,791	309	1,433	2,767	93
2015	246,369	1,372	128,695	9,370	102,270	315	1,475	2,781	91
2016	246,062	1,051	129,794	8,749	101,760	305	1,486	2,823	94
2017	246,370	805	130,990	8,409	101,415	321	1,461	2,869	100
2018	244,732	617	131,417	8,481	99,425	325	1,446	2,922	99
2019	243,704	487	131,769	8,887	97,691	323	1,453	2,994	100

Note: Includes vested former members. *Includes members of the Maryland General Assembly and State correctional officers.

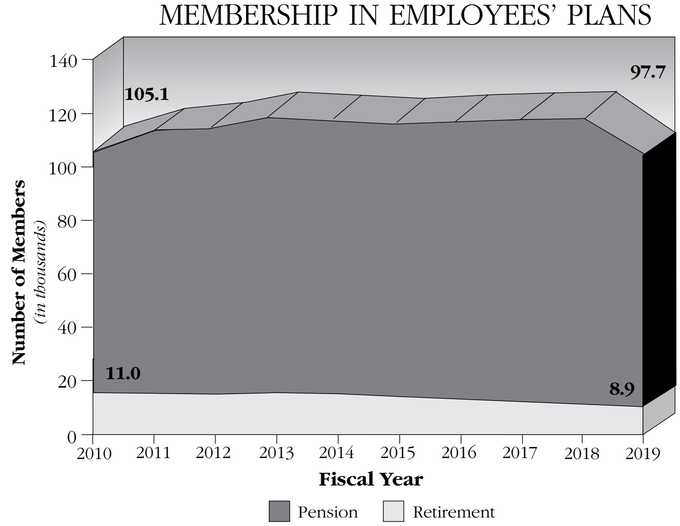
TOTAL SYSTEM MEMBERSHIP



MEMBERSHIP IN TEACHERS' PLANS



MEMBERSHIP IN EMPLOYEES' PLANS

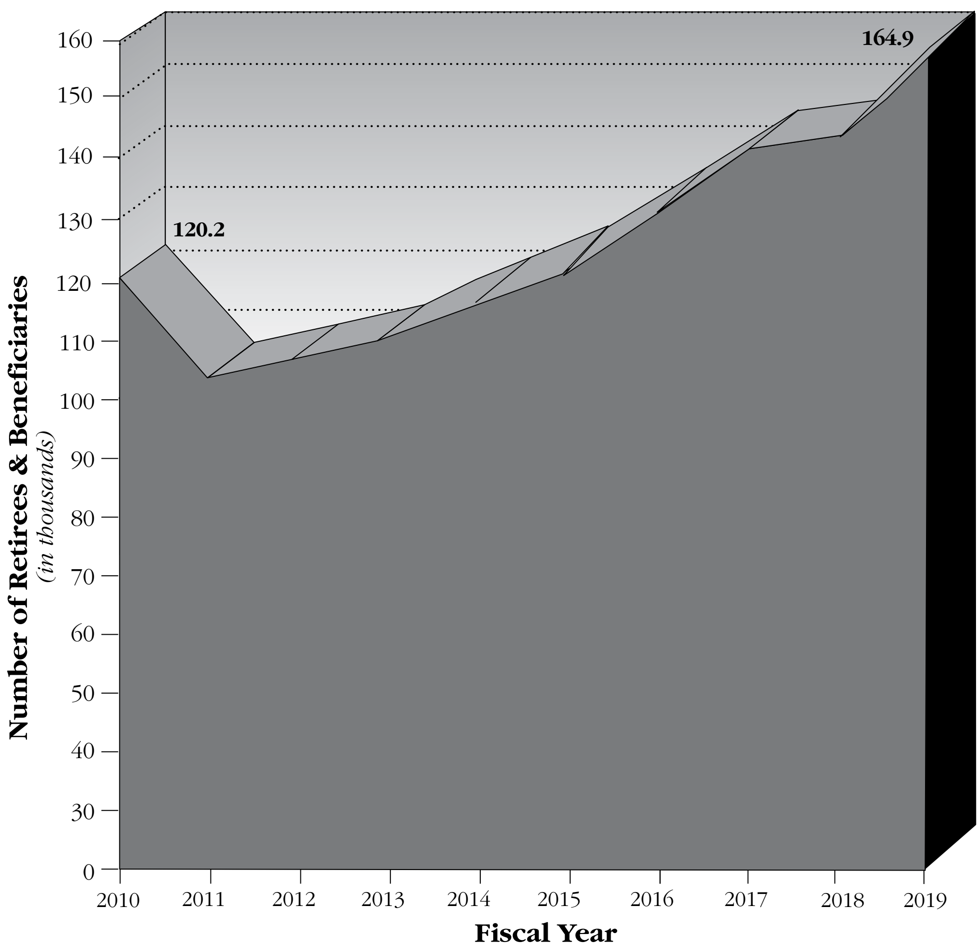


TEN-YEAR HISTORY OF RETIREES AND BENEFICIARIES BY PLAN

Fiscal Year	Total	Teachers' Retirement	Teachers' Pension	Employees' Retirement*	Employees' Pension	Judges' Retirement	State Police Retirement	Law Enforcement Officers' Pension	Correctional Officers' Retirement System
2010	120,247	30,270	27,269	23,475	35,418	351	2,282	1,182	-
2011	127,171	30,012	30,553	23,230	39,339	358	2,371	1,302	6
2012	132,493	29,705	33,994	22,796	41,840	365	2,387	1,396	10
2013	137,925	29,247	37,143	22,368	44,825	378	2,428	1,518	18
2014	142,887	28,762	40,167	22,013	47,446	395	2,468	1,613	23
2015	147,850	28,131	43,045	21,571	50,460	397	2,508	1,711	27
2016	152,566	27,552	46,030	21,172	53,039	407	2,536	1,801	29
2017	156,366	26,762	48,747	20,734	55,206	417	2,572	1,896	32
2018	160,374	25,764	51,437	20,340	57,947	421	2,477	1,954	34
2019	164,892	24,822	54,329	19,955	60,757	431	2,505	2,053	40

* Includes members of the Maryland General Assembly and correctional officers.

TOTAL SYSTEM RETIREES AND BENEFICIARIES



TEN-YEAR HISTORY OF REVENUES BY SOURCE AND EXPENSES BY TYPE

(Expressed in Thousands)

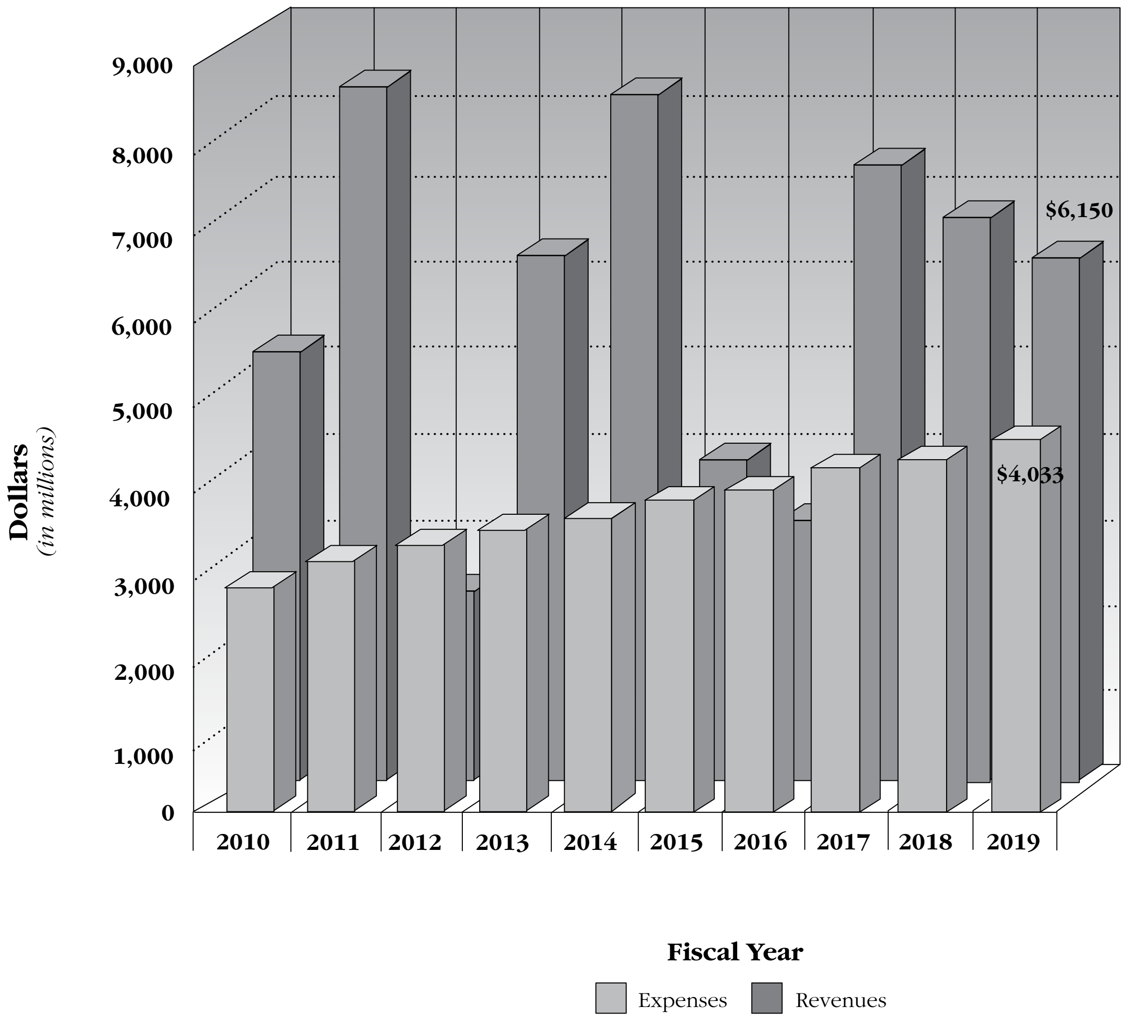
REVENUES

Fiscal Year	Members' Contributions	Employers' and Other Contributions	Annual Covered Payroll	Employers' and Other Contributions as a Percent of Covered Payroll	Net Investment Income	Total Revenues
2010	$ 535,581	$ 1,308,921	$ 10,657,944	12.28 %	$ 4,016,359	$ 5,860,861
2011	528,028	1,512,472	10,478,800	14.43	6,273,337	8,313,837
2012	703,256	1,595,761	10,336,536	15.44	104,084	2,403,100
2013	710,856	1,643,101	10,477,544	15.68	3,845,795	6,199,752
2014	727,726	1,733,653	10,803,631	16.05	5,706,267	8,167,646
2015	755,444	1,858,612	11,063,961	16.80	1,197,671	3,811,727
2016	764,414	1,870,655	11,155,924	16.77	497,531	3,132,600
2017	782,686	2,036,596	11,418,973	17.83	4,473,443	7,292,725
2018	791,583	1,995,017	11,566,220	17.24	3,899,393	6,685,993
2019	807,291	2,054,091	11,905,463	17.25	3,288,209	6,149,591

EXPENSES

Fiscal Year	Benefits	Administrative Expenses	Refunds	Total
2010	$ 2,445,540	$ 28,627	$ 33,531	$ 2,507,698
2011	2,580,392	30,961	33,369	2,644,722
2012	2,755,106	28,201	33,819	2,817,126
2013	2,950,700	26,280	38,281	3,015,261
2014	3,121,823	26,130	42,922	3,190,875
2015	3,284,550	29,080	48,245	3,361,875
2016	3,469,493	28,659	58,362	3,556,514
2017	3,577,123	30,904	63,441	3,671,468
2018	3,744,132	33,211	68,600	3,845,943
2019	3,926,220	39,784	67,400	4,033,404

TEN-YEAR HISTORY OF REVENUES VS. EXPENSES



PRINCIPAL PARTICIPATING EMPLOYERS
CURRENT YEAR AND NINE YEARS AGO

	2019			2010		
	Covered Employees	**Rank**	**Percentage of Total System**	**Covered Employees**	**Rank**	**Percentage of Total System**
Participating Government						
State of Maryland	356,870	1	87%	323,741	1	88%
All other (Participating Municipalities)	51,726	2	13%	46,067	2	12%
Total System	408,596			369,808		

Governmental Units Participating in the Systems

as of June 30, 2019

Allegany Community College
Allegany County Board of Education
Allegany County Government
Allegany County Housing Authority
Allegany County Library
Allegany County Transit Authority
Annapolis, City of
Anne Arundel Community College
Anne Arundel County Board of Education
Anne Arundel County Community Action Agency, Inc.
Baltimore Metropolitan Council
Berlin, Town of
Berwyn Heights, Town of
Bladensburg, Town of
Bowie, City of
Brunswick, City of
Calvert County Board of Education
Cambridge, City of
Cambridge Housing Authority
Caroline County Board of Education
Caroline County Sheriff Deputies
Carroll County Board of Education
Carroll County Public Library
Carroll Soil Conservation District
Catoctin & Frederick County Soil Conservation District
Cecil County Board of Education
Cecil County Government
Cecil County Library
Centreville, Town of
Chesapeake Bay Commission
Chestertown, Town of
Cheverly, Town of
College of Southern Maryland
College Park, City of
Crisfield, City of
Crisfield Housing Authority
Cumberland, City of
Cumberland, City of -Police Department
Denton, Town of
District Heights, City of
Dorchester County Board of Education
Dorchester County Government
Dorchester County Roads Board
Dorchester County Sanitary Commission
Eastern Shore Regional Library
Edmonston, Town of
Elkton, Town of
Emmitsburg, Town of
Federalsburg, Town of
Frederick County Board of Education
Frostburg, City of
Fruitland, City of
Garrett County Board of Education
Garrett County/Western Maryland Health Planning Council
Garrett County Community Action Committee
Garrett County Roads Board
Greenbelt, City of
Greensboro, Town of
Hagerstown, City of
Hagerstown Community College
Hampstead, Town of
Harford County Board of Education
Harford County Community College
Harford County Government
Harford County Library
Harford County Liquor Board
Howard Community College
Howard County Board of Education
Howard County Community Action Committee
Hurlock, Town of
Hyattsville, City of
Kent County Board of Education
Kent County Government
Kent Soil And Water Conservation District
Landover Hills, Town of
LaPlata, Town of
Manchester, Town of
Maryland Health & Higher Educational Facilities Authority
Middletown, Town of
Montgomery College
Morningside, Town of
Mount Airy, Town of
Mount Rainier, City of
New Carrollton, City of
North Beach, Town of
Northeast Maryland Waste Disposal Authority
Oakland, Town of
Oxford, Town of
Pocomoke, City of
Preston, Town of
Prince Georges Community College
Prince Georges County Board of Education
Prince Georges County Crossing Guards
Prince Georges County Government
Prince Georges County Memorial Library
Princess Anne, Town of
Queen Anne's County Board of Education
Queen Anne's County Government
Queenstown, Town of
Ridgely, Town of
Rockhall, Town of
Salisbury, City of
Shore Up!
Snow Hill, Town of
Somerset County Board of Education
Somerset County Government
Somerset County Economic Development Commission
Somerset County Sanitary District, Inc.
Southern MD Tri-County Community Action Committee
St. Mary's County Board of Education
St. Mary's County Government
St. Mary's County Housing Authority
St. Mary's County Metropolitan Commission
St. Michaels, Town of
Sykesville, Town of
Takoma Park, City of
Talbot County Board of Education
Talbot County Government
Taneytown, Town of
Thurmont, City of
Tri-County Council For Lower Eastern Shore
Tri-County Council For Western Maryland
University Park, Town of
Upper Marlboro, Town of
Walkersville, Town of
Washington County Board of Education
Washington County Liquor Board
Washington County Library
Westminster, City of
Worcester County Board of Education
Worcester County Government
Worcester County Liquor Control Board
Wor-Wic Community College

*Withdrawn Governmental Units

Anne Arundel County Government
Bethesda Fire Department
Caroline County Roads Board
Chevy Chase Fire Department
Hancock, Town of
Harford County Liquor Control Board (1982)
Lexington Market Authority
Maryland National Capital Park & Planning Commission
Montgomery County Board of Education
Montgomery County Government
Montgomery County Public Library
St. Mary's Nursing Home
University of Maryland Medical System
Washington County Government
Washington County Board of License Commissioners (1972)
Washington County Roads Board
Washington County Sanitary District
Western Maryland Health Planning Agency
Wicomico County Department of Recreation and Parks
Wicomico County Roads Board

**List reflects withdrawn governmental units with a withdrawal liability balance.*

Plan Summary

This guide provides a general summary of certain features of the Maryland State Retirement and Pension System ("MSRPS"). The MSRPS is governed by law, including Division II of the State Personnel and Pensions Article of the Annotated Code of Maryland, and Title 22 of the Code of Maryland Regulations. If there is a conflict between the law and this guide, the law prevails.

CITATIONS

All citations "SPP" are to the State Personnel and Pensions Article of the Annotated Code of Maryland.

Teachers' Retirement System

A COMPOSITE PICTURE

	2019	2018
Total Membership		
Active Vested	334	418
Active Non-vested	–	–
Vested Former Members	153	199
Retired Members	24,822	25,764
Active Members		
Number	334	418
Average Age	68.3	67.3
Average Years of Service	43.0	42.1
Average Annual Salary	$ 101,714	$ 99,275
Retirees & Beneficiaries		
Number	24,822	25,764
Average Age	78.3	77.8
Average Monthly Benefit	$ 3,388	$ 3,280

1. Membership

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

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

2. Member Contributions

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

- Plan A: Generally 7% of earnable compensation to maintain all benefits, including unlimited compounded cost-of-living adjustments.
- Plan B: Generally 5% of earnable compensation to maintain all benefits, except the compounded cost-of-living adjustments which are capped at 5%.
- Plan C: 5% of earnable compensation as determined under the employee contribution for the Teachers' Pension System (Plan C provides a two-part benefit based on benefits of the Teachers' Retirement System and the Teachers' Pension System).

Interest earned on all employee contributions is 4% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 60.

4. Normal Service Retirement Allowance

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

Allowance: $1/55^{th}$ of average final compensation for the three highest years as a member for each year of creditable service. Creditable service is based on a full normal working time for teachers – 10 months equals one year.

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

5. Early Retirement Allowance

Eligibility: 25 years of eligibility service and less than 60 years old.

Allowance: Service Retirement allowance reduced by 0.5% for each month that date of retirement precedes the earlier of age 60 or the date the member would have completed 30 years of eligibility service (maximum reduction of 30%).

Plan C: For creditable service before election date, the amount determined by the service retirement formula for Teachers' Retirement System (maximum reduction of 30%); for creditable service after election date, the amount determined by the service retirement formula for the applicable component of the Teachers' Pension System for each month retirement occurs prior to age 62 (maximum reduction of 42%).

6. Disability Retirement Allowance

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

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

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

Accidental
Eligibility: Certification of the medical board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty at a definite time and place without willful negligence by the member.

Allowance: The benefit is 66.67% of average final compensation for the three highest years as a member, plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation, including any annuitized accumulated contributions.

7. Death Benefits

Ordinary Death Benefit For Active Member With Less Than One Year of Service

Eligibility: Less than one year of eligibility service and not eligible for a special death benefit

Benefit: Return of accumulated contributions

Ordinary Death Benefit For Active Member With One Or More Years of Service

Eligibility: One or more years of eligibility service and not eligible for a special death benefit

Benefit:
Members who at the time of death are younger than age 55 or have less than 15 years of service.
One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions to the member's designated beneficiary.

Members who at the time of death are eligible to retire and are age 55 or older with at least 15 years of service.
The surviving spouse of a deceased member may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) a monthly allowance under Option 2 (100% survivor benefit). In cases where a deceased member is not survived by a spouse, the decedent's children may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) an allowance equal to 50% of the basic allowance that would have been paid to the deceased member, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. If any child is disabled, the benefit will continue for that child as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, the member's

designated beneficiary shall receive a one-time lump sum payment consisting of the member's accumulated contributions and the member's annual compensation at the time of death.

Special Death Benefit For Active Member
Eligibility: Death arising out of or in the course of the actual performance of duty without willful negligence by the member.

Benefit: 66.67% of average final compensation for the three highest years as a member payable to a surviving spouse, decedent's children or dependent parents. Accumulated member contributions are paid to the designated beneficiary. Children of deceased members receiving a special death benefit will continue to receive this benefit, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26.The annuity shall be reallocated among the remaining eligible children. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled, regardless of age.

Death Benefit For Vested Former Member
If member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

Eligibility: Five years of eligibility service and separation from employment other than by death or retirement.

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

If member dies before payment of the vested allowance starts, only accumulated member contributions are returned.

9. Cost of Living Adjustments (COLA)

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

- Selection A (Additional Member Contributions): Uncapped and compounded.
- Selection B (Limited COLA): Capped at 5% and compounded.
- Selection C (Combination Formula): For creditable service on or after the effective date of Selection C, generally, with limited exceptions, COLA is capped at 3% and compounded. For creditable service before the effective date of Selection C, COLA is calculated based on the applicable component (A or B) to which the member was subject prior to electing Section C.

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.

10. Optional Forms of Payment

Basic service allowance is a single life annuity.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

Vested former members who are eligible to receive a vested allowance of less than $50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

11. Reduction for Benefits Payable under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Teachers' Retirement System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Teachers' Retirement System for the same injury or illness. Any offset taken for an accidental disability from the Teachers' Retirement System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

Teachers' Pension System

A COMPOSITE PICTURE

	2019	2018
Total Membership		
Active Vested	63,708	67,199
Active Non-vested	43,740	39,229
Vested Former Members	24,321	24,989
Retired Members	54,329	51,437
Active Members		
Number	107,448	106,428
Average Age	45.0	44.9
Average Years of Service	11.9	11.9
Average Annual Salary	$ 66,256	$ 64,829
Retirees & Beneficiaries		
Number	54,329	51,437
Average Age	71.1	70.7
Average Monthly Benefit	$ 1,960	$ 1,905

1. Membership

Membership is generally a condition of employment for those teachers, faculty members, and educational employees, specified in SPP § 23-206 of the Annotated Code of Maryland, hired on or after January 1, 1980. Certain eligible higher education employees may elect to join an optional defined contribution retirement program provided by the State, known as the Optional Retirement Program (ORP). The ORP is separate and distinctive from the supplemental program administered by the Maryland Supplemental Retirement Plan.

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

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

2. Member Contributions

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

Contributions earn interest at 5% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

For members of the Alternate Contributory Pension Selection, normal retirement age is age 62.

For members of the Reformed Contributory Pension Benefit, normal retirement age is age 65.

4. Normal Service Retirement Allowance

ACPS Eligibility 30 years of eligibility service or attainment of one of the following:

Age 62 with five years of eligibility service.
Age 63 with four years of eligibility service.
Age 64 with three years of eligibility service.
Age 65 and older with two years of eligibility service.

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

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

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

(iii) the number of years of the member's creditable service on or after July 1, 1998 multiplied by 1.8% of the member's average final compensation for the three highest consecutive years as a member.

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

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

The SSIL is the average of all Social Security Wage Bases over the 35 calendar years prior to your retirement.

Note: Members who transferred into the Teachers' Pension System, on or after April 1, 1998, receive benefits based on the provisions of the NCPS (refer to page 149) in effect as of January 1, 1980, except for COLA benefits.

5. Early Retirement Allowance

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

ACPS Allowance: Service retirement allowance computed as of early retirement date, reduced by 0.5% for each month that early retirement date precedes age 62 (maximum reduction of 42%).

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

RCPB Allowance: Service retirement allowance computed as of early retirement date, reduced by 0.5% for each month that early retirement date precedes age 65 (maximum reduction of 30%).

6. Disability Retirement Allowance

Ordinary

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

Allowance: The benefit is the service retirement allowance computed on the basis that service continues until normal retirement age. If disability occurs after age 62 (age 65 for RCPB), the benefit is based on creditable service at time of retirement.

Accidental

Eligibility: Certification of the medical board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty without willful negligence by the member.

Allowance: The benefit is 66.67% of average final compensation for the three highest consecutive years (five highest for RCPB) as a member plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation including any annuitized accumulated contributions.

7. Death Benefits

Ordinary Death Benefit For Active Member With Less Than One Year of Service

Eligibility: Less than one year of eligibility service and not eligible for a special death benefit.

Benefit: Return of accumulated contributions

Ordinary Death Benefit For Active Member With One Or More Years of Service

Eligibility: One or more years of eligibility service and not eligible for a special death benefit

Benefit:

Members who at the time of death are not members of the Reformed Contributory Pension Benefit, are younger than age 55 and have less than 15 years of service or are members of the Reformed Contributory Pension Benefit, are younger than age 60 and have less than 15 years of service.

One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions to the member's designated beneficiary.

Members who at the time of death: (1) are eligible to retire; (2) have accrued at least 25 years of eligibility service; (3) are not members of the Reformed Contributory Pension Benefit and are age 55 or older with at least 15 years of service; or (4) are members of the Reformed Contributory Pension Benefit and are age 60 or older with at least 15 years of service.

The surviving spouse of a deceased member may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) a monthly allowance under Option 2 (100% survivor benefit). In cases where a deceased member is not survived by a spouse, the decedent's children may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) an allowance equal to 50% of the basic allowance that would have been paid to the deceased member, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. If any child is disabled, the benefit will continue for that child as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, the member's designated beneficiary shall receive a one-time lump sum payment consisting of the member's accumulated contributions and the member's annual compensation at the time of death.

Special Death Benefit For Active Member

Eligibility: Death arising out of or in the course of the actual performance of duty without willful negligence by the member.

Benefit: 66.67% of average final compensation for the three highest consecutive years as a member, except for member's participating in the RCPB component for which the average final compensation is the five highest consecutive years as a member, payable to a surviving spouse, decedent's children or dependent parents. Accumulated contributions are paid to the designated beneficiary. Children of deceased members receiving a special death benefit will continue to receive this benefit prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled, regardless of age.

Death Benefit For Vested Former Member
If a member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

ACPS Eligibility: Five years of eligibility service and separation from employment other than by death or retirement.

ACPS Allowance: Accrued retirement allowance payable at age 62 provided member does not withdraw accumulated contributions. A member who has completed 15 years of eligibility service may begin to receive benefit payments at any time on or after attainment of age 55, reduced by 0.5% for each month that benefit commencement date precedes age 62 (maximum reduction of 42%.)

If member dies before payment of the vested allowance starts, only accumulated member contributions are returned.

RCPB Eligibility: 10 years of eligibility service and separation from employment other than by death or retirement

RCPB Allowance: Accrued retirement allowance payable at age 65 provided member does not withdraw accumulated contributions. A member who has completed 15 years of eligibility service may begin to receive benefit payments at any time on or after attainment of age 60, reduced by 0.5% for each month that benefit commencement date precedes age 65 (maximum reduction of 30%.)

If member dies before payment of the vested allowance starts, only accumulated member contributions are returned.

9. Cost of Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Effective July 1, 1998, and for an allowance based on creditable service before July 1, 2011, the adjustment is capped at a maximum of 3% compounded and is applied to all allowances which have been in payment for one year. For an allowance based on creditable service earned on or after July 1, 2011, the COLA adjustment is capped at 2.5% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was greater than or equal to the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year. The adjustment is capped at 1% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was less than the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year.

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

Any adjustments are effective July 1.

10. Optional Forms of Payment

Basic service allowance is a single life annuity.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

Vested former members who are eligible to receive a vested allowance of less than $50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

11. Reduction for Benefits Payable under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Teachers' Pension System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Teachers' Pension System for the same injury or illness. Any offset taken for an accidental disability from the Teachers' Pension System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

Employee's Retirement System

A COMPOSITE PICTURE

	2019	2018
Total Membership		
Active Vested	5,417	5720
Active Non-vested	2,702	2,005
Vested Former Members	768	756
Retired Members	19,955	20,340
Active Members		
Number	8,119	7,725
Average Age	45.5	45.8
Average Years of Service	13.3	14.2
Average Annual Salary	$ 51,663	$ 51,475
Retirees & Beneficiaries		
Number	19,955	20,340
Average Age	73.5	73.5
Average Monthly Benefit	$ 2,079	$ 2,007

1. Membership

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

Membership generally includes employees of the State and other eligible participating employers.

2. Member Contributions

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

Interest earned on all employee contributions is 4% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 60.

4. Normal Service Retirement Allowance

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

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

Plan C: For creditable service before election date, the amount determined by the service retirement formula for Employees' Retirement System; for creditable service after election date, the amount determined by the service retirement formula for the applicable component of the Employees' Pension System under which the employer and member participates.

5. Early Retirement Allowance

Eligibility: 25 years of eligibility service and less than 60 years old.

Allowance: Service retirement allowance reduced by 0.5% for each month that date of retirement precedes the earlier of age 60 or the date the member would have completed 30 years of eligibility service (maximum reduction of 30%).

Plan C: For creditable service before election date, the amount determined by the service retirement formula for Employees' Retirement System with a maximum reduction of 30%; for creditable service after election date, the amount determined by the service retirement formula for the applicable component of the Employees' Pension System under which the employer participates with a 0.5% reduction for each month retirement occurs prior to age 62 (maximum reduction of 42%).

6. Disability Retirement Allowance

Ordinary

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

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

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

Accidental

Eligibility: Certification of the medical board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty at a definite time and place without willful negligence by the member.

Allowance: The benefit is 66.67% of average final compensation for the three highest years as a member, plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation, including any annuitized accumulated contributions.

7. Death Benefits

Ordinary Death Benefit For Active Member With Less Than One Year of Service
Eligibility: Less than one year of eligibility service and not eligible for a special death benefit.

Benefit: Return of accumulated contributions

Ordinary Death Benefit For Active Member With One or More Years of Service
Eligibility: One or more years of eligibility service and not eligible for a special death benefit.

Benefit:

Members who at the time of death are younger than age 55 or have less than 15 years of service.
One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions to the member's designated beneficiary.

Members who at the time of death are eligible to retire and are age 55 or older with at least 15 years of service.
The surviving spouse of a deceased member may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) a monthly allowance under Option 2 (100% survivor benefit). In cases where a deceased member is not survived by a spouse, the decedent's children may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) an allowance equal to 50% of the basic allowance that would have been paid to the deceased member, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. If any child is disabled, the benefit will continue for that child as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, the member's designated beneficiary shall receive a one-time lump sum payment consisting of the member's accumulated contributions and the member's annual compensation at the time of death.

Special Death Benefit For Active Member
Eligibility: Death arising out of or in the course of the actual performance of duty without willful negligence by the member.

Benefit: 66.67% of average final compensation for the three highest years as a member payable to a surviving spouse, decedent's children or dependent parents. Accumulated member contributions are paid to the designated beneficiary. Children of deceased members receiving a special death benefit will continue to receive this benefit, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled, regardless of age.

Death Benefit For Vested Former Member
If member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

Eligibility: Five years of eligibility service and separation from employment other than by death or retirement.

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

9. Cost-of-Living Adjustments (COLA)

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

- Selection A (Additional Member Contributions): Uncapped and compounded.
- Selection B (Limited COLA): Capped at 5% and compounded.
- Selection C (Combination Formula): For creditable service on or after the effective date of Selection C, generally, with limited exceptions, COLA is capped at 3% and compounded. For creditable service before the effective date of Selection C, COLA is calculated based on the applicable component (A or B) to which the member was subject prior to electing Selection C.

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.

10. Optional Forms of Payment

Basic service allowance is a single life annuity.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

Vested former members who are eligible to receive a vested allowance of less than $50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

11. Reduction for Benefits Payable Under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Employees' Retirement System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Employees' Retirement System for the same injury or illness. Any offset taken for an accidental disability from the Employees' Retirement System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

Correctional Officers' Retirement System

COMPOSITE THAT INCLUDES STATE & MUNICIPAL	2019	2018
Total Membership		
Active Vested	290	365
Active Non-vested	0	1
Vested Former Members	131	212
Retired Members	13,534	14,208
Active Members		
Number	290	357
Average Age	66.4	65.3
Average Years of Service	43.0	41.9
Average Annual Salary	$ 75,144	$ 74,560
Retirees & Beneficiaries		
Number	13,534	14,208
Average Age	78.5	78.2
Average Monthly Benefit	$ 2,184	$ 2,093

1. Membership

Membership is generally a condition of employment for correctional officers serving in the first six job classifications, individuals serving as a security chief, a facility administrator, and assistant warden or a warden, maximum security attendants at Clifton T. Perkins Hospital Center, and employees of the State as provided in SPP § 25-201. This includes participating governmental units who elect to have their detention center officers participate in the Correctional Officers' Retirement System.

2. Member Contributions

Members are required to make contributions of 5% of earnable compensation.

Interest earned on all employee contributions is 4% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 55 for service retirement, age 60 for disability retirement.

4. Normal Service Retirement Allowance

Eligibility: For individuals who are members on or before June 30, 2011, either age 55 with at least 5 years of eligibility service credit or 20 years of eligibility service, regardless of age. For individuals who are members on or after July 1, 2011, either age 55 with at least 10 years of eligibility service credit, or 20 years of eligibility service, regardless of age.

Allowance: For individuals who are members on or before June 30, 2011, 1/55th of average final compensation for the three highest years as a member for each year of creditable service. For individuals who are members on or after July 1, 2011, 1/55th of average final compensation for the five highest years as a member for each year of creditable service.

5. Early Retirement Allowance

Not applicable to the Correctional Officers' Retirement System, except for certain Baltimore City Jail employees who may retire with 10 years of creditable service., as specified in SPP § 25-401.1.

6. Disability Retirement Allowance

Ordinary

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

Allowance:The benefit is 1/55th of the average final compensation for the three highest years as a member (five highest for members enrolled on or after July 1, 2011). The minimum benefit is 25% of average final compensation; the maximum benefit can be no greater than 1/55th of average final compensation for each year of creditable service the member would have accrued if employment continued to age 60.

Accidental

Eligibility: Certification of the medical board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty at a definite time and place without willful negligence by the member.

Allowance: The benefit is 66.67% of average final compensation for the three highest years as a member (five highest for members enrolled on or after July 1, 2011), plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation, including any annuitized accumulated contributions.

7. Death Benefits

Ordinary Death Benefit For Active Member With Less Than One Year of Service

Eligibility: Less than one year of eligibility service and not eligible for a special death benefit.

Benefit: Return of accumulated contributions

Ordinary Death Benefit For Active Members With One Or More Years of Service

Eligibility: One or more years of eligibility service and not eligible for a special death benefit.

Benefit:

Members who at the time of death are younger than age 55 or have less than 15 years of service

One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions to the member's designated beneficiary.

Members who at the time of death are eligible to retire and are age 55 or older with at least 15 years of service

The surviving spouse of a deceased member may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) a monthly allowance under Option 2 (100% survivor benefit). In cases where a deceased member is not survived by a spouse, the decedent's children may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) an allowance equal to 50% of the basic allowance that would have been paid to the deceased member, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. If any child is disabled, the benefit will continue for that child past age 26 as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, the member's designated beneficiary shall receive a one-time lump sum payment consisting of the member's accumulated contributions and the member's annual compensation at the time of death.

Special Death Benefit for Active Member

Eligibility: Death arising out of or in the course of the actual performance of duty without willful negligence by the member.

Benefit: 66.67% of average final compensation for the three highest years as a member payable to a surviving spouse, the decedent's children or dependent parents. Accumulated member contributions are paid to the designated beneficiary. Children of deceased members receiving a special death benefit will continue to receive this benefit, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled, regardless of age.

Death Benefit For Vested Former Member

If member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

Eligibility: For individuals who are members on or before June 30, 2011, five years of eligibility service. For individuals who become member on or after July 1, 2011, 10 years of eligibility service. Member must also be separated from employment other than by death or retirement.

Allowance: Service retirement allowance payable at age 55 provided the member does not withdraw the member's accumulated contributions.

9. Cost-of-Living Adjustments (COLA)

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

Uncapped compounded COLAs are applied to all benefits attributable to creditable service earned on or before June 30, 2011.

For an allowance based on creditable service earned on or after July 1, 2011, the COLA is capped at 2.5% if, for the calendar year ending December 31 in the previous fiscal year the several systems' total investment performance was greater than or equal to the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year. The adjustment is capped at 1% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was less than the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year.

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.

10. Optional Forms of Payment

Basic service allowance is a single life annuity.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

Vested former members who are eligible to receive a vested allowance of less than $50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

11. Reduction for Benefits Payable Under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Correctional Officers' Retirement System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Correctional Officers' Retirement System for the same injury or illness. Any offset taken for an accidental disability from the Correctional Officers' Retirement System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

Legislative Pension Plan

A COMPOSITE PICTURE

	2019	2018
Total Membership		
Active Vested	77	88
Active Non-vested	112	101
Vested Former Members	51	47
Retired Members	315	292
Active Members		
Number	189	189
Average Age	53.3	56.4
Average Years of Service	7.6	10.2
Average Annual Salary	$ 50,489	$ 50,489
Retirees & Beneficiaries		
Number	315	292
Average Age	76.1	76.2
Average Monthly Benefit	$ 1,525	$ 1,459

1. Membership

Membership is generally a condition of employment for members of the Maryland General Assembly during the 2019-2022 term of office.

2. Member Contributions

Members are required to contribute 7% of annual salary up to 22 years and three months of creditable service.

Interest earned on all employee contributions is 4% per year, compounded annually, until retirement or withdrawal of accumulated contributions.

3. Normal Retirement Age

For members who have creditable service prior to January 14, 2015, normal retirement age is age 60.

For members who do not have creditable service prior to January 14, 2015, normal retirement age is age 62.

4. Service Retirement Allowance

Eligibility: For individuals who have creditable service in the Legislative Pension Plan before January 14, 2015, age 60 with eight years of creditable service. For individuals who have no creditable service in the Legislative Pension Plan before January 14, 2015, age 62 with eight years of creditable service.

Allowance: 3% of salary of an active legislator for each year of service, multiplied by the number of years of creditable service. The maximum benefit available for a member is 66.67% of salary payable to an active legislator.

5. Reduced Service Retirement Allowance

Eligibility: For individuals who have creditable service in the Legislative Pension Plan before January 14, 2015, age 50 with eight years of creditable service. For individuals who have no creditable service in the Legislative Pension Plan before January 14, 2015, age 55 with eight years of creditable service.

Allowance: For individuals who have creditable service in the Legislative Pension Plan before January 14, 2015, a service retirement allowance computed as of early retirement date, reduced by 0.5% for each month under age 60 (maximum reduction of 60%). For individuals who have no creditable service in the Legislative Pension Plan before January 14, 2015, a service retirement allowance computed as of early retirement date, reduced by 0.5% for each month under age 62 (maximum reduction of 42%).

6. Disability Retirement Allowance

Eligibility: Eight years of creditable service, regardless of age, and certification of the medical board designated by the Board of Trustees that the member is mentally or physically incapacitated from further performance of duty as a legislator, and that incapacity is likely to be permanent.

Allowance: Service retirement allowance, regardless of age.

7. Death Benefits

Death Of A Member With At Least Eight Years Of Creditable Service

Eligibility: At least eight years of creditable service.

Beneficiary: Payment of the benefit shall be made to the member's surviving spouse. If there is no surviving spouse at the time of the member's death, the benefit shall be prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If any child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment will be made to the member's designated beneficiary.

Benefit: The member's beneficiary (surviving spouse, children, or designated beneficiary) may elect to receive: (1) a return of the member's accumulated contributions plus the member's annual salary, if any, at the time of death; or (2) an annuity equal to 50% of the retirement allowance that would have been paid at the member's death, regardless of the member's age. The surviving spouse or children will begin receiving the death benefit at the time of the member's death. A designated beneficiary who elects to receive the annuity may not begin receiving the benefit until the beneficiary reaches age 60, if the deceased member had creditable service in the Legislative Pension Plan before January 14, 2015, or age 62, if the deceased member did not have creditable service before January 14, 2015. The designated beneficiary may elect to begin receiving a reduced annuity at age 50, if the deceased member had creditable service before January 14, 2015, or age 55 if the deceased member did not have creditable service before January 14, 2015.

Death Of A Member With Less Than Eight Years Of Creditable Service

Eligibility: A member currently serving in the legislature with less than eight years of creditable service

Beneficiary: Payment of the benefit shall be made to the member's surviving spouse. If there is no surviving spouse at the time of the member's death, the benefit shall be prorated equally among the eligible children. A child is eligible for a prorated share if the child is under age 26 or the child is disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment will be made to the member's designated beneficiary. If a member designates more than one beneficiary, the benefit shall be prorated equally among each beneficiary.

Benefit: A lump-sum benefit equal to the member's accumulated contributions plus the member's annual salary at the time of death.

Death Of A Member With No Beneficiary

On death of a member who is not survived by a spouse, children, or designated beneficiary, the Board of Trustees shall pay the member's accumulated contributions to the estate of the member.

Death Of Retiree

Upon the death of a retiree, a survivor allowance equal to 50% of the retiree's retirement allowance is payable to the retiree's surviving spouse for the spouse's life. If the retiree has no surviving spouse and the retiree has creditable service before January 14, 2015, the full survivor allowance is payable to the designated beneficiary for life beginning at age 60 or an optional reduced survivor allowance is payable to the designated beneficiary for life beginning at age 50. If the retiree has no surviving spouse and the retiree has no creditable service before January 14, 2015, the full survivor allowance is payable to the designated beneficiary for life beginning at age 62 or an optional reduced survivor allowance is payable to the designated beneficiary for life beginning at age 55.

8. Vested Allowance

Eligibility: Eight years of creditable service and separation from employment other than by death or retirement.

Allowance: For individuals who have creditable service in the Legislative Pension Plan before January 14, 2015, a service retirement allowance payable at age 60, provided the member has not withdrawn the member's accumulated contributions. For individuals who have no creditable service in the Legislative Pension Plan before January 14, 2015, a service retirement allowance payable at age 62, provided the member has not withdrawn the member's accumulated contributions.

9. Cost-of-Living Adjustments

Generally, allowances are recalculated each time the salary for a sitting legislator increases.

10. Optional Forms of Payment

Basic Allowance: Normal service allowance with a 50% joint and survivor annuity to the retiree's surviving spouse. If there is no surviving spouse, to the retiree's designated beneficiary. A surviving spouse will begin receiving the death benefit at the time of the retiree's death. A designated beneficiary may not begin receiving the benefit until the beneficiary reaches age 60, if the deceased retiree had creditable service in the Legislative Pension Plan before January 14, 2015, or age 62, if the deceased retiree did not have creditable service before January 14, 2015. The designated beneficiary may elect to begin receiving a reduced annuity at age 50, if the deceased retiree had creditable service before January 14, 2015, or age 55 if the deceased retiree did not have creditable service before January 14, 2015.

Option 1: 100% joint and survivor annuity. If, at the time of retirement the member is married and elects to receive Option 1, the member's spouse must be the designated beneficiary. The designated beneficiary may not be more than 10 years younger than the member unless the beneficiary is the member's spouse or disabled child.

Employees' Pension System

A COMPOSITE PICTURE

	2019	2018
Total Membership		
Active Vested	39,108	42,718
Active Non-vested	33,990	30,765
Vested Former Members	24,593	25,942
Retired Members	60,757	57,947
Active Members		
Number	73,098	73,483
Average Age	48.6	48.6
Average Years of Service	11.5	11.7
Average Annual Salary	$ 54,591	$ 53,121
Retirees & Beneficiaries		
Number	60,757	57,947
Average Age	70.5	70.1
Average Monthly Benefit	$ 1,313	$ 1,271

1. Membership

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

There are four plans under the Employees' Pension System.

- Noncontributory Pension System **(NCPS)** - The original pension system established on January 1, 1980 that only applies to certain participating governmental units that did not elect to participate in the Contributory Pension System, Alternate Contributory Pension Selection, or Reformed Contributory Pension Benefit.
- Employees' Contributory Pension System **(ECPS)** – The ECPS established July 1, 1998 that only applies to certain participating governmental units that elected the ECPS but did not elect to participate in the Alternate Contributory Pension Selection, or Reformed Contributory Pension Benefit.
- Alternate Contributory Pension Selection **(ACPS)**

applies to all State employees and employees of participating governmental units that are members of the ACPS on or before June 30, 2011.

- Reformed Contributory Pension Benefit (**RCPB**) – Applies to all State employees and, employees of participating governmental units enrolling in the Employees' Pension System on or after July 1, 2011. It does not apply to employees of participating governmental units that did not elect to participate in the ACPS or RCPB.

2. Member Contributions

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

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

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

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

Contributions earn interest at 5% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

For members of the Non-Contributory, Contributory, or Alternate Contributory Pension Selection, normal retirement age is age 62.

For members of the Reformed Contributory Pension Benefit, normal retirement age is age 65.

4. Normal Service Retirement Allowance

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

Age 62 with five years of eligibility service
Age 63 with four years of eligibility service
Age 64 with three years of eligibility service
Age 65 or older with two years of eligibility service

NCPS Allowance:

0.8% of average final compensation up to the Social Security Integration Level (SSIL) for the three highest consecutive years as a member plus 1.5% of average final compensation over the SSIL for each year of creditable service;

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

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

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

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

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

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

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

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

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

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

SSIL is the average of all Social Security Wage Bases over the 35 calendar years prior to your retirement.

Note: Members who transferred into the Employees' Pension System, on or after April 1, 1998, receive benefits based on the provisions of the NCPS as in effect on January 1, 1980 except for COLA benefits.

5. Early Retirement Allowance

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

NCPS, ECPS, and ACPS Allowance: Service retirement allowance computed as of early retirement date, reduced by 0.5% for each month that early retirement date precedes age 62 (maximum reduction is 42%).

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

RCPB Allowance: Service retirement allowance computed as of early retirement date, reduced by 0.5% for each month that early retirement date precedes age 65 (maximum reduction is 30%).

6. Disability Retirement Allowance

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

Allowance:The benefit is the service retirement allowance computed on the basis that service continues until normal retirement age. If disability occurs on or after age 62 (age 65 for RCPB), the benefit is based on creditable service at time of retirement.

Accidental
Eligibility: Certification of the medical board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty without willful negligence by the member.

Allowance: The benefit is 66.67% of average final compensation for the three highest consecutive years (five highest for RCPB) as a member, plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation including any annuitized accumulated contributions.

7. Death Benefits

Ordinary Death Benefit For Active Member With Less Than One Year of Service

Eligibility: Less than one year of eligibility service and not eligible for a special death benefit.

Benefit: Return of accumulated contributions

Ordinary Death Benefit For Active Member With One Or More Years of Service

Eligibility: One or more years of eligibility service and not eligible for a special death benefit.

Benefit:

Members who at the time of death are not members of the Reformed Contributory Pension Benefit, are younger than age 55, and have less than 15 years of service or are members of the Reformed Contributory Pension Benefit, are younger than age 60, and have less than 15 years of service.
One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions to the member's designated beneficiary.

Members who at the time of death: (1) are eligible to retire ; (2) have accrued at least 25 years of eligibility service; (3) are not members of the Reformed Contributory Pension Benefit and are age 55 or older with at least 15 years of service; or (4) are members of the Reformed Contributory Pension Benefit and are age 60 or older with at least 15 years of service.
The surviving spouse of a deceased member may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) a monthly allowance under Option 2 (100% survivor benefit). In cases where a deceased member is not survived by a spouse, the decedent's children may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) an allowance equal to 50% of

the basic allowance that would have been paid to the deceased member, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. If any child is disabled, the benefit will continue for that child as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, the member's designated beneficiary shall receive a one-time lump sum payment consisting of the member's accumulated contributions and the member's annual compensation at the time of death.

Special Death Benefit For Active Member

Eligibility: Death arising out of or in the course of the actual performance of duty without willful negligence by the member.

Benefit: 66.67% of average final compensation for the three highest consecutive years as a member, except for member's participating in the RCPB component for which the average final compensation is the five highest consecutive years as a member, payable to a surviving spouse, the decedent's children or dependent parents. Accumulated member contributions are paid to the designated beneficiary. Children of deceased members receiving a special death benefit will continue to receive this benefit, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled, regardless of age.

Death Benefit For Vested Former Member

If a member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

NCPS, ECPS, and ACPS Eligibility: Five years of eligibility service and separation from employment other than by death or retirement.

NCPS, ECPS, and ACPS Allowance: Accrued retirement allowance payable at age 62. A member who has completed 15 years of eligibility service may begin to receive benefit payments at any time on or after attainment of age 55, reduced by 0.5% for each month that benefit commencement date precedes age 62 (maximum reduction of 42%).

If member dies before payment of the vested allowance starts, only accumulated member contributions are returned.

RCPB Eligibility: 10 years of eligibility service and separation from employment other than by death or retirement.

RCPB Allowance: Accrued retirement allowance payable at age 65 provided member does not withdraw accumulated contributions. A member who has completed 15 years of eligibility service may begin to receive benefit payments at any time on or after attainment of age 60, reduced by 0.5% for each month that benefit commencement date precedes age 65 (maximum reduction of 30%).

If member dies before payment of the vested allowance starts, only accumulated member contributions are returned.

9. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Generally, effective July 1, 1998, and for an allowance based on creditable service earned before July 1, 2011, the adjustment is capped at a maximum of 3% compounded and is applied to all allowances which have been in payment for one year.

Generally, for an allowance based on creditable service earned on or after July 1, 2011, the COLA is capped at 2.5% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was greater than or equal to the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year. The adjustment is capped at 1% if, for the calendar year ending December 31 in the previous fiscal year the several systems' total investment performance was less than the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year.

For certain individuals, such as employees of a participating governmental unit that has not elected the contributory pension benefit or the Alternate

Contributory Pension Selection for its members, or their surviving beneficiaries, the allowance is subject to a simple COLA capped at 3%.

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.

10. Optional Forms of Payment

Basic service allowance is in a single life annuity.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

Vested former members who are eligible to receive a vested allowance of less than $50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

11. Reduction for Benefits Payable Under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Employees' Pension System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Employees' Pension System for the same injury or illness. Any offset taken for an accidental disability from the Employees' Pension System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

State Police Retirement System

A COMPOSITE PICTURE

	2019	2018
Total Membership		
Active Vested	882	921
Active Non-vested	482	426
Vested Former Members	89	99
Retired Members	2,505	2,477
Active Members		
Number	1,364	1,347
Average Age	36.4	36.3
Average Years of Service	12.1	12.0
Average Annual Salary	$ 78,430	$ 74,480
Retirees & Beneficiaries		
Number	2,505	2,477
Average Age	64.5	64.0
Average Monthly Benefit	$ 4,277	$ 4,167

1. Membership

Membership is a condition of employment for all officers of the Maryland State Police.

2. Member Contributions

Members are required to contribute 8% of earnable compensation.

Contributions earn interest at 4% per year, compounded annually, until retirement, withdrawal of the accumulated contributions, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 50.

4. Normal Service Retirement Allowance

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

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

5. Early Retirement Allowance

Not applicable to the State Police Retirement System.

6. Disability Retirement Allowance

Ordinary

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

Allowance: The allowance is the greater of a normal service retirement allowance (as described above) or 35% of the member's average final compensation.

Special (Accidental)

Eligibility: Total and permanent incapacity for duty as certified by the medical board arising out of or in the course of the actual performance of duty without willful negligence by the member.

Allowance: For members who are under normal retirement age, the benefit is the lesser of either the member's average final compensation, or the sum of 66.67% of the member's average final compensation and an annuity that is actuarially equivalent to the member's accumulated contributions. Members who are at least normal retirement age are entitled either to the benefit as calculated for members under normal retirement age, or a normal service retirement allowance, whichever is greater.

7. Death Benefits

Normal Death Benefit – Return of Accumulated Contributions

Eligibility: Death while employed as a member and less than one year of eligibility service. A normal death benefit may be not paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Normal Death Benefit – Return of Accumulated Contributions and Annual Earnable Compensation

Eligibility: Death while employed as a member and at least one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated contributions and an amount equal to the member's annual earnable compensation at the time of death to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Special Death Benefit For Death While Employed And Not In Performance Of Duty

Eligibility: Death while employed as a member, without member's willful negligence, and not in the performance of duty. Member has more than two years of eligibility service. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions plus an allowance equal to 50% of the member's average final compensation.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 50% of the member's average final compensation shall be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 50% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Special Death Benefit For Death In The Performance Of Duty

Eligibility: Death while employed as a member, without member's willful negligence, and in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions plus an allowance equal to 66.67% of the member's average final compensation.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 66.67% of the member's average final compensation shall be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 66.67% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Waiver of Special Death Benefit

Before the payment of any special death benefit is made under this section, if all individuals eligible for a special death benefit elect to waive the payment of the special death benefit, a normal death benefit is paid to the member's designated beneficiary, or otherwise to the member's estate.

Death Benefit For Vested Former Member

If a member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

Eligibility: For individuals who became members on or before June 30, 2011, five years of eligibility service and separation from employment other than by death or retirement. For individuals who become members on or after July 1, 2011, 10 years of eligibility service and separation from employment other than by death or retirement.

Allowance: Service retirement allowance payable at normal retirement age, provided the member does not withdraw the member's accumulated contributions.

9. Cost-of-Living Adjustments (COLA)

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

Uncapped compounded COLAs are applied to all benefits attributable to creditable service earned on or before June 30, 2011.

For an allowance based on creditable service earned on or after July 1, 2011, the COLA adjustment is capped at 2.5% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was greater than or equal to the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year. The adjustment is capped at 1% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was less than the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year.

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

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

10. Optional Forms of Payment

If, at the time of death, the retiree is married, the retiree's spouse is entitled to receive a survivor benefit consisting of 80% of the retiree's retirement allowance. If there is no surviving spouse or upon the death of the surviving spouse, payment of the survivor benefit is divided equally among any children of the deceased retiree under the age of 18 years, until each child dies or becomes age 18. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. If there is no spouse at time of retirement, member may select an optional allowance.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

11. Reduction for Benefits Payable Under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. State Police Retirement System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the State Police Retirement System for the same injury or illness. Any offset taken for an accidental disability from the State Police Retirement System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

12. Deferred Retirement Option Program (DROP)

Eligibility: Members who joined the State Police Retirement System on or before June 30, 2011 are eligible to participate in the DROP if they are less than 60 years old and have at least 22 but less than 30 years of eligibility service. Members who join the State Police System on or after July 1, 2011 are eligible to participate in the DROP if they are less than 60 years old and have at least 25 but less than 30 years of eligibility service.

Participation: An eligible member may participate in the DROP for the lesser of 5 years, the difference between 30 years and the member's creditable service, the difference between 60 years and the member's age on date of election to participate, or a term selected by the member. Participation also ends if the participant dies, is terminated from employment, accepts a special disability retirement allowance, or submits a binding letter of resignation or notice of intent to terminate employment. Members who participate in the DROP are retired and cease making member contributions, and cease accruing service credit and additional benefits.

Allowance: For members who entered the DROP on or before June 30, 2011, the service retirement allowance, with COLAs, is credited to an account earning interest at the rate of 6% per year, compounded monthly. For members who enter DROP on or after July 1, 2011, the service retirement allowance, with COLAs, is credited to an account earning interest at the rate of 4% per year, compounded annually. When the DROP period ends, members terminate employment and begin receiving their monthly allowance plus the lump sum payment from their DROP account. During the DROP period, members remain eligible for Special Disability benefits if incapacitated while in DROP.

Judges' Retirement System

A COMPOSITE PICTURE

	2019	2018
Total Membership		
Active Vested	207	197
Active Non-vested	108	119
Vested Former Members	8	9
Retired Members	431	421
Active Members		
Number	315	316
Average Age	57.5	57.8
Average Years of Service	8.1	8.4
Average Annual Salary	$ 155,349	$ 150,311
Retirees & Beneficiaries		
Number	431	421
Average Age	77.5	77.5
Average Monthly Benefit	$ 6,839	$ 6,595

1. Membership

Membership is a condition of employment for a judge of the Court of Appeals, Court of Special Appeals, Circuit Court, or District Court of Maryland and members of the State Workers' Compensation Commission. Membership ends if the member is separated from employment for more than four years, withdraws the member's accumulated contributions, retires, or dies.

2. Member Contributions

Members are required to make contributions of 8% of salary until they have completed 16 years of service as a member.

Contributions earn interest at 4% per year, compounded annually, until retirement or withdrawal of accumulated contributions. Non-vested members who became members of the Judges' Retirement System on or after July 1, 2012 shall not receive interest after membership ends.

3. Normal Retirement Age

Normal retirement age is age 60.

4. Retirement Allowance

Eligibility: An individual who is a member of the Judges' Retirement System before July 1, 2012 is entitled to a retirement allowance: (1) on termination of service if the member is at least age 60; (2) on resignation for disability and recommendation of the medical board, (3) when retired by order of the Court of Appeals, or (4) at the age of 60 years. An individual who becomes a member of the Judges' Retirement System on or after July 1, 2012 is entitled to a retirement allowance: (1) on termination of service if the member is at least 60 and has at least 5 years of eligibility service; (2) on resignation for disability and recommendation of the medical board, (3) when retired by order of the Court of Appeals if the member has at least 5 years of eligibility service; (4) at the mandatory retirement age required by the Maryland Constitution with less than five years of service, if the member has eligibility service equal to the mandatory retirement age minus the member's age when the member joined the Judges' Retirement System; or (5) at the age of 60, if the former member's termination of service occurred earlier and the former member had at least five years of eligibility service when the former member terminated service.

Allowance: Generally, the retirement allowance equals 66.67% of salary payable in that fiscal year to member holding same level of judicial position that retiree held on termination of service. For members with less than 16 years of service credit, the benefit is reduced based on the ratio of years of service credit to 16.

5. Early Retirement Allowance

Not applicable to the Judges' Retirement System.

6. Disability Retirement Allowance

Eligibility: Certification of the medical board designated by the Board of Trustees that member is incapacitated for the performance of duty, and that incapacity is likely to be permanent.

Allowance: A retirement allowance payable immediately. However, if a judge has at least three years of service credit as a member, the allowance will be at least .333% of the judge's salary at the time of retirement.

7. Death Benefits

Monthly Allowance

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

Allowance: 50% of the pension that would have been payable to the judge or former judge as of the date of death, as if the judge or former judge was eligible to receive a retirement allowance, is payable to surviving spouse. If there is no spouse, payment is divided equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age.

Lump Sum

On death of a member who is not survived by a spouse or children, the Board of Trustees shall pay the member's accumulated contributions and an amount equal to the member's annual salary at time of death to the member's designated beneficiary. If the member has designated more than one beneficiary, this lump-sum death benefit shall be divided equally among the beneficiaries. If a member's service is terminated by death and the member leaves no spouse, child under the age of 18 years, or designated beneficiary, the member's accumulated contributions shall be paid to the member's estate.

8. Vested Allowance

Eligibility: Individuals who became members before July 1, 2012, are eligible once they have both separated from service and reached age 60 years. Individuals who become members on or after July 1, 2012, are eligible once they have separated from service, reached age 60 years, and earned five years of eligibility service. Also eligible are individuals who became members on or after July 1, 2012 who are required to retire due to mandatory retirement and have less than 5 years of service at that time, if they have an amount of eligibility service equal to constitutional mandatory retirement age minus the member's age when the individuals first become members of the System.

Allowance: Same as allowance payable at age 60.

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

9. Cost-of-Living Adjustments (COLA)

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

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

10. Optional Forms of Payment

For survivor allowance payable to a member's surviving spouse, children under age 26, or disabled children, see Death Benefits section above. A judge or former judge, who at the time of retirement, does not have a spouse or child under the age of 18 years, may elect one of the following optional forms of payment:

Option 1: Lump-sum equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

A retiree who has elected one of these optional forms of allowance may not change the designated beneficiary.

Law Enforcement Officers' Pension System

A COMPOSITE PICTURE

	2019	2018
Total Membership		
Active Vested	1,502	1,602
Active Non-vested	1,181	1,015
Vested Former Members	311	305
Retired Members	2,053	1,954
Active Members		
Number	2,683	2,617
Average Age	41.0	41.0
Average Years of Service	10.8	10.8
Average Annual Salary	$ 67,448	$ 65,172
Retirees & Beneficiaries		
Number	2,053	1,954
Average Age	61.1	60.6
Average Monthly Benefit	$ 3,032	$ 2,980

A. PENSION PROVISIONS

1. Membership

Membership generally is a condition of employment for all law enforcement officers who are employees of the State as provided in SPP § 26-201, or whose employers are participating governmental units who elect to have their law enforcement officers or firefighters/paramedics participate in the Law Enforcement Officers' Pension System.

2. Member Contributions

Members are required to contribute 7% of earnable compensation.

Contributions earn interest at 5% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 50.

4. Normal Service Retirement Allowance

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

Allowance: For individuals who became members on or before June 30, 2011, 2.0% of average final compensation for the three highest consecutive years as a member. For individuals who became members on or after July 1, 2011, 2.0% of average compensation for the five highest consecutive years as a member. For members who retired before July 1, 2018, the maximum benefit was 60% of average final compensation. For members who retire on or after July 1, 2018, the maximum benefit is 65% of average final compensation.

5. Early Retirement Allowance

Not applicable to the Law Enforcement Officers' Retirement System.

6. Disability Retirement Allowance

Ordinary

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

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

Accidental
Eligibility: Total and permanent incapacity for duty as certified by the medical board arising out of or in the course of the actual performance of duty, without willful negligence.

Allowance: The benefit is 66.7% of average final compensation plus an annuity provided by accumulated member contributions.The maximum benefit cannot be greater than the average final compensation.

7. Death Benefits

Normal Death Benefit – Return of Accumulated Contributions
Eligibility: Death while employed as a member and less than one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Normal Death Benefit – Return of Accumulated Contributions and Annual Earnable Compensation
Eligibility: Death while employed as a member and at least one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions and an amount equal to the member's annual earnable compensation at the time of death to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Special Death Benefit For Death While Employed And Not In Performance Of Duty
Eligibility: Death while employed as a member, without the member's willful negligence, and not in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.
Benefit: Accumulated member contributions plus an allowance equal to 50% of the ordinary disability allowance the member would have received at the time of the member's death.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 50% of the ordinary disability allowance the member would have received at the time of the member's death shall be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 50% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Special Death Benefit For Death In The Performance Of Duty
Eligibility: Death while employed as a member, without the member's willful negligence, and not in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions plus an allowance equal to 66.67% of the member's average final compensation.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 66.67% of the member's average final compensation be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 66.67% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Waiver of Special Death Benefit
Before the payment of any special death benefit is made under this section, if all individuals eligible for a special death benefit elect to waive the payment of the special death benefit, a normal death benefit is paid to the member's designated beneficiary, or otherwise to the member's estate.

Death Benefit For Vested Former Member
If a member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

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

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

9. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Any COLAs are effective July 1, for allowances which have been in payment for one year. Effective July 1, 2000, for an allowance based on creditable service earned before July 1, 2011, the adjustment is capped at a maximum 3% compounded and is applied to all allowances which have been in payment for one year.

For an allowance based on creditable service earned on or after July 1, 2011, the COLA adjustment is capped at 2.5% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was greater than or equal to the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year. The adjustment is capped at 1% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was less than the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year.

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.

10. Optional Forms of Payment

If, at the time of death, the retiree is married, the retiree's spouse is entitled to receive a survivor benefit consisting of 50% of the retiree's basic allowance. If there is no surviving spouse or upon the death of the surviving spouse, payment of the survivor benefit is divided equally among any children of the deceased retiree under the age of 26 years, until each child dies or becomes age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. If there is no spouse at time of retirement, member may select an optional allowance.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

11. Reduction for Benefits Payable under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Law Enforcement Officers' Pension System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Law Enforcement Officers' Pension System for the same injury or illness. Any offset taken for an accidental disability from the Law Enforcement Officers' Pension System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

12. Deferred Retirement Option Plan (DROP)

Eligibility: Members are eligible to participate in the DROP if they have at least 25 and less than 30 years of creditable service.

Participation: An eligible member may participate in the DROP for the lesser of 5 years, the difference between 30 years and the member's creditable service, or a term selected by the member. Participation also ends if the participant dies, is terminated from employment, accepts an accidental disability retirement allowance, or submits a binding letter of resignation or notice of intent to terminate employment. Members who participate in the DROP are retired and cease making member contributions, and cease accruing service credit and additional benefits.

Allowance: For members who entered the DROP on or before June 30, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 6% per year, compounded monthly. For members who enter DROP on or after July 1, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 4% per year, compounded annually. When the DROP period ends, members terminate employment and begin receiving their monthly allowance plus the lump sum payment from their DROP account. During the DROP period, members remain eligible for accidental disability benefits if incapacitated while in DROP.

B. Members Transferring from the Employees' Retirement System[1]

1. Membership

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

2. Member Contributions

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

Contributions earn interest at 4% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 50.

4. Normal Service Retirement Allowance

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

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

5. Early Retirement Allowance

Not applicable to this System.

1 This section B outlines the provisions applicable to members of LEOPS who transferred from the Employees' Retirement System before January 1, 2005 and were subject to Selection A or Selection B and did not elect to participate in the contributory law enforcement officers' modified benefit.

6. Disability Retirement Allowance

Ordinary

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

Allowance: The greater of normal service retirement allowance or 25% of average final compensation.

Accidental

Eligibility: Total and permanent incapacity for duty as certified by the medical board arising out of or in the course of the actual performance of duty, without willful negligence.

Allowance: The benefit is 66.7% of average final compensation plus an annuity that is the actuarial equivalent of accumulated contributions. The maximum benefit cannot be greater than the average final compensation.

7. Death Benefits

Normal Death Benefit – Return of Accumulated Contributions

Eligibility: Death while employed as a member and less than one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Normal Death Benefit – Return of Accumulated Contributions and Annual Earnable Compensation

Eligibility: Death while employed as a member and at least one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions and an amount equal to the member's annual earnable compensation at the time of death to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Special Death Benefit For Death While Employed And Not In Performance Of Duty
Eligibility: Death while employed as a member, without the member's willful negligence, and not in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions plus an allowance equal to 50% of the ordinary disability allowance the member would have received at the time of the member's death.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 50% of the ordinary disability allowance the member would have received at the time of the member's death shall be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 50% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Special Death Benefit For Death In The Performance Of Duty
Eligibility: Death while employed as a member, without the member's willful negligence, and not in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions paid plus an allowance equal to 66.67% of the member's average final compensation.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 66.67% of the member's average final compensation be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 66.67% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Waiver of Special Death Benefit
Before the payment of any special death benefit is made under this section, if all individuals eligible for a special death benefit elect to waive the payment of the special death benefit, a normal death benefit is paid to the member's designated beneficiary, or otherwise to the member's estate.

Death Benefit For Vested Former Member
If a member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

Eligibility: Five years of eligibility service and separation from employment other than by death or retirement.

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

9. Cost-of-Living Adjustments (COLA)

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

For an allowance for members that elected Selection A (contributing 7% of earnable compensation), uncapped COLA is compounded annually. For an allowance for members that elected Selection B (contributing 5% of earnable compensation), the COLA is capped at a maximum 5% compounded annually.

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

10. Optional Forms of Payment

If, at the time of death, the retiree is married, the retiree's spouse if entitled to receive a survivor benefit consisting of 50% of the retiree's basic allowance. If there is no surviving spouse or upon the death of the surviving spouse, payment of the survivor benefit is divided equally among any children of the deceased retiree under the age of 26 years, until each child dies or becomes age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. If there is no spouse at time of retirement, member may select an optional allowance.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

11. Reduction for Benefits Payable under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Law Enforcement Officers' Pension System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Law Enforcement Officers' Pension System for the same injury or illness. Any offset taken for an accidental disability from the Law Enforcement Officers' Pension System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

12. Deferred Retirement Option Program (DROP)

Eligibility: Members are eligible to participate in the DROP if they have at least 25 and less than 30 years of creditable service.

Participation: An eligible member may participate in the DROP for the lesser of 5 years, the difference between 30 years and the member's creditable service, or a term selected by the member. Participation also ends if the participant dies, is terminated from employment, accepts an accidental disability retirement allowance, or submits a binding letter of resignation or notice of intent to terminate employment. Members who participate in the DROP are retired and cease making member contributions, and cease accruing service credit and additional benefits.

Allowance: For members who entered the DROP on or before June 30, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 6% per year, compounded monthly. For members who enter DROP on or after July 1, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 4% per year, compounded annually. When the DROP period ends, members terminate employment and begin receiving their monthly allowance plus the lump sum payment from their DROP account. During the DROP period, members remain eligible for Accidental Disability benefits if incapacitated while in DROP.

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