Employees' Retirement System of Baltimore County, Maryland

COMPREHENSIVE ANNUAL FINANCIAL REPORT

A Pension Trust Fund of Baltimore County

For the Fiscal Years Ended June 30, 2019 and 2018

COMPREHENSIVE ANNUAL FINANCIAL REPORT OF THE EMPLOYEES' RETIREMENT SYSTEM OF BALTIMORE COUNTY

FOR THE YEARS ENDED JUNE 30, 2019 AND 2018

A PENSION
TRUST FUND OF
BALTIMORE COUNTY
MARYLAND

Prepared By:
Office of Budget and Finance

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INTRODUCTORY SECTION

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Employees' Retirement System of Baltimore County, Maryland

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

June 30, 2018

Christopher P. Morrill

Executive Director/CEO

EMPLOYEES' RETIREMENT SYSTEM OF BALTIMORE COUNTY

Letter of Transmittal

The Board of Trustees
Employees' Retirement System of Baltimore County
Towson, Maryland 21204

December 20, 2019

The Comprehensive Annual Financial Report of the Employees' Retirement System of Baltimore County, Maryland (the "System") for the year ended June 30, 2019 (FY 2019), is submitted herewith. The System is a Pension Trust Fund included in the financial statements of Baltimore County, Maryland. The System administration is responsible for the accuracy and fairness of the information contained in this report. To the best of our knowledge and belief, the enclosed data is accurate in all material respects and is reported in a manner designed to present fairly the fiduciary net position and changes in the fiduciary net position of the System in conformity with accounting principles generally accepted in the United States of America.

Generally accepted accounting principles require management to provide a narrative introduction, overview, and analysis to accompany the basic financial statements in the form of Management's Discussion and Analysis (MD&A). This letter of transmittal is designed to complement the MD&A and should be read in conjunction with it. The MD&A may be found immediately following the report of the independent auditors.

Plan History. The System, a defined benefit plan, was established January 1, 1945 by County ordinance. The authority to establish and maintain the System is specified in Section 5-1-101 of the Baltimore County Code. Membership in the System is open to employees in both the classified and unclassified service of Baltimore County, and employees of the Baltimore County Revenue Authority, the Baltimore County Board of Education, the Baltimore County Board of Library Trustees and the Community College of Baltimore County who are not eligible to participate in the Maryland State Retirement and Pension Systems. Direct appointees of the Governor of Maryland, temporary employees and employees for whom there are existing pension provisions are excluded. System membership is compulsory for general County merit employees after sixty days of service for members hired on or after January 1, 2014. Immediate membership is mandatory for police officers and firefighters as a condition of employment. Membership is optional for non-merit employees but must be made within sixty days of employment.

Benefits and Services Provided. The System provides normal service retirement and discontinued service retirement benefits for members who attain the age and service requirements. Coverage for occupational disability benefits is immediate upon entry into the System. Disability benefits for non-occupational related injury or illness are provided to vested members. Members hired prior to July 1, 2007 are vested after five years of creditable service. Members hired on or after July 1, 2007 are vested after ten years of creditable service. Ordinary disability benefits are provided to Police Officers and Firefighters after five years of creditable service if hired prior to July 1, 2007, and after ten years of creditable service for all other members. Occupational death benefits are provided upon membership for any member whose death results from an injury occurring in the actual performance of their job.

Letter of Transmittal, continued

Post-Retirement Cost-of-Living Adjustments (COLAs) are granted annually as of July 1, to members who have been retired for more than 60 months, provided sufficient excess investment earnings exist in the Post Retirement Increase Fund. For active members who select the Deferred Retirement Option Program (DROP), the eligibility period to receive COLAs in the DROP remains a minimum of 12 months. Once the member actually retires, the eligibility period for a post-retirement COLA is a minimum of 48 months. Members retiring on or after July 1, 2010 and hired prior to July 1, 2007 must have 20 years of creditable service to qualify for COLAs. Members hired on or after July 1, 2007 must have 25 years of creditable service to qualify for COLAs.

The staff makes benefit presentations at new employee orientations and retirement seminars.

INVESTMENT PERFORMANCE

The System's investment portfolio time-weighted rate of return, gross of fees, was 4.4% in FY 2019 and 8.2% in FY 2018. The Comparative Balanced Index was 6.8% and 8.3% respectively, for the same periods.

FUNDING STATUS

For actuarial valuation purposes, gains and losses were smoothed over a ten-year period. The actuarially determined target investment return is a long-term target and significant deviations from this target can be expected. The actuarial cost method applied is the projected unit credit. Based on the latest available actuarial reports, the funded status of the System as of January 1, 2019 and 2018 were 62.7%, and 63.2%, respectively.

INVESTMENT STRATEGIES

Under the experienced direction of its Board of Trustees, the System plans to continue maximizing investment returns while maintaining an acceptable level of risk. The System will continue to invest assets domestically as well as internationally in an effort to maintain an appropriate balance.

During FY2019, the Board increased their target to U.S. equites from 24% to 26%, increased their target to Fixed Income from 24% to 26%, decreased their target to international equites from 25% to 24%, and decreased their target to Global asset Allocation from 15% to 12%.

The Board hired one domestic equity manager, two emerging market small cap equity managers, one emerging market international small cap equity manager and two private equity managers. Terminated managers include one domestic equity manager, and one global asset allocation manager. The Board implemented these changes to better meet the System's long-term risk and return objectives.

MAJOR ISSUES AND INITIATIVES

LEGISLATIVE AND ADMINISTRATIVE CHANGES

On November 18, 2018, the County Council approved Bill No. 78-18 related to "Benefit Determination Issues". Retroactive to June 30, 2018, an employee on Pay Schedule I-E for 911 employees, at the time of retirement shall receive membership service for unused sick leave in accordance with the formula that sixteen (16) days of unused sick leave are equal to one (1) month of membership service. One (1) additional month of membership service shall be granted if fractional days totaling eight (8) or more result from the application of this formula.

Letter of Transmittal, continued

FINANCIAL INFORMATION

Accounting System. The System's financial statements have been prepared using the economic resources measurement focus and the accrual basis of accounting in accordance with accounting principles generally accepted in the United States of America. Accordingly, contributions and investment income are recorded when earned regardless of the date of collection and benefits and other expenses are recorded when liabilities are incurred regardless of when payment is made.

Internal Control. In developing and evaluating the accounting system, consideration is given to the adequacy of internal accounting controls. Internal accounting controls are designed to provide reasonable, but not absolute, assurance regarding the safeguarding of assets against loss from unauthorized use or disposition and the reliability of financial records for preparing financial statements and maintaining accountability for assets. The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits likely to be derived; and the evaluation of cost and benefits requires estimates and judgments by management. All internal control evaluations occur within this framework. Management believes the System's internal accounting controls adequately safeguard assets and provide reasonable assurance of proper recording of financial transactions.

Investments. As provided in Article 5, Title 1 of the Baltimore County Code, the Board of Trustees is empowered to invest the System's assets utilizing the "prudent person" standard and to take appropriate action regarding the investment, management and custodianship of plan assets. The investment responsibilities include establishing reasonable investment objectives, developing investment policy guidelines, selecting investment managers and evaluating performance results to ensure adherence to guidelines and the achievement of objectives.

OTHER INFORMATION

Independent Audit. The County has contracted with a firm of independent certified public accountants to audit the System's financial statements. The independent auditors' report is contained herein.

Professional Services. The Board of Trustees has appointed an actuary, a pension investment consultant, an asset custodian, a medical board and numerous investment managers to provide services to the System. The list of professionals which provide services to the System is found on pages 7 through 9. The Schedule of Fees and Schedule of Commissions paid to investment professionals is located on page 62 of the Investment Section.

Certificate of Achievement. The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Employees' Retirement System of Baltimore County for its comprehensive annual financial report for the fiscal year ended June 30, 2018. This was the twenty-fifth consecutive year that the System has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government 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 GFOA to determine its eligibility for another certificate.

Letter of Transmittal, continued

ACKNOWLEDGMENTS

The preparation of this report on a timely basis reflects the combined effort and dedication of the System's staff. On behalf of the Board of Trustees, I would like to take this opportunity to express my gratitude to the staff who have worked so diligently to assure the successful operation of the System. This report is intended to provide complete and reliable information as a basis for making management decisions, as a means of determining compliance with legal provisions and for determining responsible stewardship for the assets of the System.

Respectfully submitted,

Edward P. Blades
Director of Budget and Finance and
Secretary to the Board of Trustees
Employees' Retirement System of Baltimore County

Board of Trustees

The Ex-officio trustees serve by virtue of their position with Baltimore County.

Consultants and Professional Services

Actuary
Korn Ferry, Inc.
Reston, Virginia

Auditors
CliftonLarsonAllen, LLP
Baltimore, Maryland

Pension Investment Consultants
NEPC, LLC
Cambridge, Massachusetts

EDP Consultant
CPAS Systems, Inc.
Toronto, Ontario, Canada

CASI
Baltimore, Maryland

Medical Board
Dr. Rubin Reider, M.D.
Dr. Jose Morelos, M.D.
Dr. Deepti Dar Razdan M.D.

Asset Custodian
BNY Mellon
Pittsburgh, Pennsylvania

Operational Banking
M & T Bank
Buffalo, New York

Investment Managers

Domestic Equity

Brown Advisory
Baltimore, Maryland

BlackRock
San Francisco, California

Benchmark Plus Management
Tacoma, Washington

Brown Capital Management
Baltimore, Maryland

Earnest Partners
Atlanta, Georgia

Channing Capital Management
Atlanta, Georgia

Matarin Capital Management
Stamford, Connecticut

Edgar Lomax Company
Alexandria, VA

International Equity

Gryphon International Investment
Toronto, Ontario, Canada

LSV Asset Management
Chicago, Illinois

BlackRock
San Francisco, California

Mondrian Investment Partners
Wilmington, Delaware

Ativo Capital Management
Chicago, Illinois

Strategic Global Advisors
Newport Beach, California

Metis Global Partners
San Diego, CA

LMCG Investments
Boston, MA

International Equity, continued

Invesco Trust Company
Atlanta, GA

Fixed Income

Pacific Investment Management Co.
Newport Beach, California

Guggenheim Investments
New York, New York

Garcia Hamilton & Associates
Houston, Texas

Stone Harbor Investment Partners
New York, New York

Reams Asset Management
Columbus, Indiana

Western Asset Management
Pasadena, California

Loomis, Sayles & Company, L.P.
Boston, Massachusetts

Pacific Asset Management
Newport Beach, California

Private Equity

HarbourVest Partners, Inc.
Boston, Massachusetts

Edison Venture Fund
Lawrenceville, New Jersey

Mesirow Financial
Chicago, Illinois

Crescent Mezzanine Partners
Los Angeles, California

Energy Spectrum Partners
Dallas, Texas

Landmark Equity Partners
Simsbury, Connecticut

Vista Equity
San Francisco, California

Private Advisors
Richmond, Virginia

Siguler Guff
New York, New York

Apollo Management
New York, New York

Newstone Capital Partners
Los Angeles, California

Paul Capital Partners
San Francisco, California

EIG Global Energy Partners
Washington, District of Columbia

Lexington Capital Partners
New York, New York

Sterling Capital
Baltimore, Maryland

CCMP Capital Advisors, LLC
New York, New York

Investment Managers, continued

Private Equity, continued

Riverstone
New York, New York

Warburg Pincus
New York, New York

Comvest Capital
West Palm Beach, FL

Park Square Credit Opps.
New York, NY

Siris Partners
New York, NY

Axiom Asia
Singapore, Singapore

Real Estate

ING Clarion
New York, New York

Aslan Realty Partners
Chicago, Illinois

UBS Global Asset Management
Hartford, Connecticut

JP Morgan
New York, New York

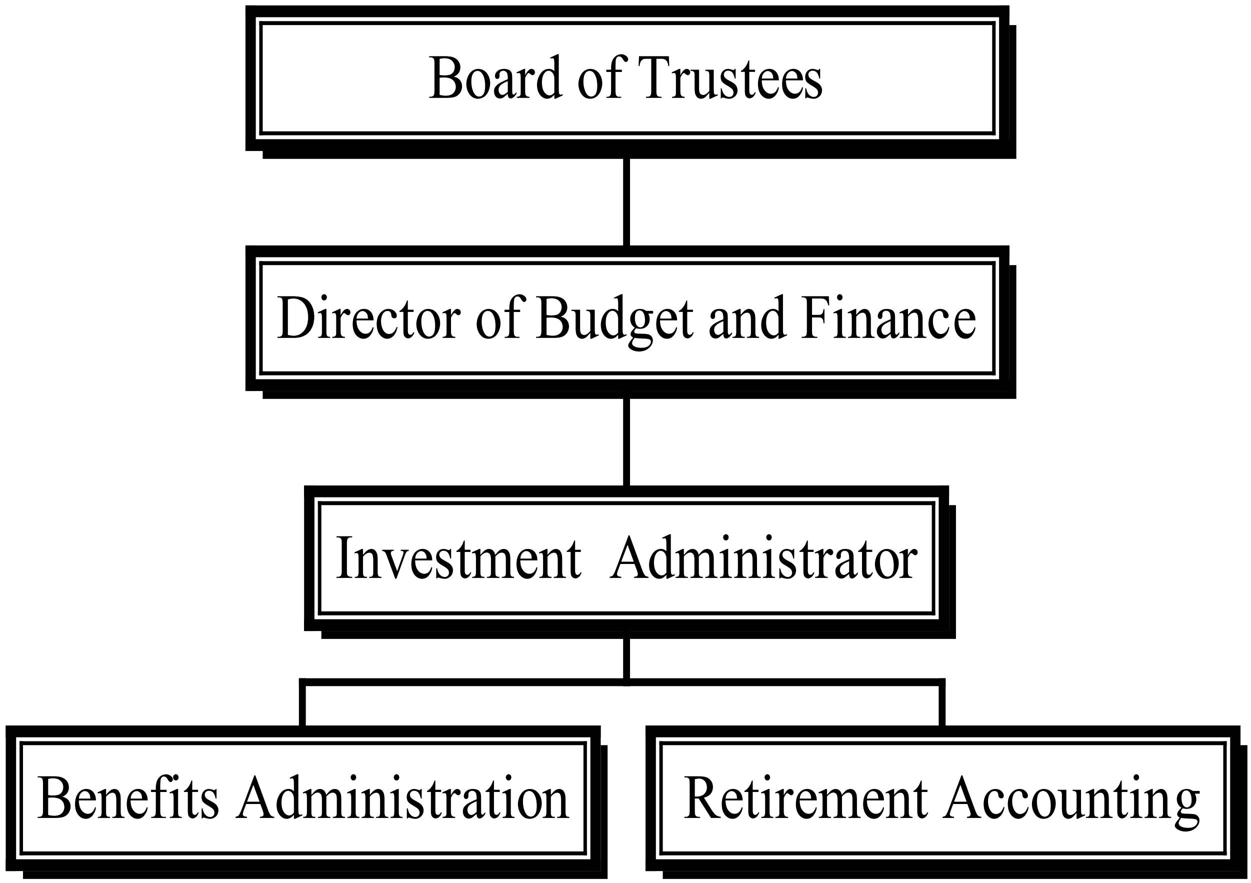
Global Asset Allocation

Bridgewater
Westport, Connecticut

Wellington Trust Company, NA
San Francisco, California

Mellon Capital Management
San Francisco, California

Administrative Organizational Chart



FINANCIAL SECTION

CliftonLarsonAllen LLP
CLAconnect.com

INDEPENDENT AUDITORS' REPORT

The Honorable County Executive and
Members of County Council
Baltimore County, Maryland

Report on the Financial Statements

We have audited the accompanying financial statements of the Employees' Retirement System of Baltimore County, Maryland (the System), a pension trust fund of Baltimore County, Maryland, which comprise the statements of fiduciary net position as of June 30, 2019 and 2018, the statements of changes in fiduciary net position for the years then ended and the related notes to the financial statements, as listed in the table of contents, which collectively comprise the System's basic financial statements.

Management's Responsibility for the Financial Statements

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

Auditors' 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 and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit 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 auditors' judgment, including the assessment of the risks of material misstatement of the 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 financial position of the System as of June 30, 2019 and 2018, and the respective changes in financial position for the years then ended in accordance with accounting principles generally accepted in the United States of America.

A member of Nexia International

The Honorable County Executive and
Members of County Council

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, and the schedules of changes in net pension liability and related ratios, employer contributions and investment returns and related notes, as listed in the table of contents, 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 audit 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 Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the System's basic financial statements. The schedules of investment expenses and administrative expenses, introductory, investment, actuarial, and statistical sections, as listed in the table of contents, are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The schedules of investment expenses and administrative expenses are the responsibility of management and were derived from and relate 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 audit 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 schedules of investment expenses and administrative expenses are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The information in the introductory, investment, actuarial, and statistical sections has 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 it.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated December 20, 2019 on our consideration of the System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the System's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the System's internal control over financial reporting and compliance.

CliftonLarsonAllen LLP

CliftonLarsonAllen LLP

Baltimore, Maryland
December 20, 2019

Management's Discussion and Analysis

Our discussion and analysis of the financial performance of the Employees' Retirement System of Baltimore County (the "System") provides an overview of financial activities for the fiscal years ended June 30, 2019 (FY 2019) and June 30, 2018 (FY 2018). Please read it in conjunction with the transmittal letter in the Introductory Section beginning on Page 2 and the basic financial statements, which follow this discussion.

FINANCIAL HIGHLIGHTS

- The System's net position restricted for pensions at the close of FY 2019 and FY 2018 was $2.794 billion and $2.788 billion, respectively.
- Contributions for FY 2019 and FY 2018 were $186.4 million and $174.6 million, respectively, an increase of 6.8%. The employer contributions for FY 2019 and FY 2018 was $138.2 million and $128.9 million, respectively, an increase of 7.2%. This increase was primarily due to the change in the discount rate; asset experience; increase due to salary changes, and the scheduled increase in unfunded accrued liability contributions.
- Net investment gain of $112.1 million resulted in a time-weighted, gross of fees return of 4.4% for FY 2019 vs. net investment gain of $212.5 million for FY 2018 which resulted in a time-weighted, gross of fees return of 8.2%. The Comparative Balanced Index was 6.8% and 8.3% respectively, for the same periods.
- Total deductions increased to $292.2 million in FY 2019 from $286.9 million in FY 2018, an increase of 1.9%. The increase was primarily due to an increase in benefit payments and refunds of contributions.
- The System's Total Pension Liability was $4.8 billion for FY 2019 and $4.6 billion for FY 2018. The Fiduciary Net Position, as a percentage of Total Pension Liability was 58.69% as of June 30, 2019, and 60.88% as of June 30, 2018.
- Covered payroll was $588.6 million as of June 30, 2019 and $572.8 million as of June 30, 2018. The System had a Net Pension Liability of $1.97 billion for FY 2019, and $1.79 billion for FY 2018. The Net Pension Liability as a percentage of Covered payroll was 334.1% as of June 30, 2019 and 312.7% as of June 30, 2018.
- The System's funding objective is to meet long-term benefit obligations through contributions and investment income. Based on the latest actuarial valuations, as of January 1, 2019 and 2018, the funded ratio was 62.7% and 63.2%, respectively.

THE STATEMENT OF FIDUCIARY NET POSITION AND THE STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

This Comprehensive Annual Financial Report (CAFR) consists of two financial statements: Statements of Fiduciary Net Position (Page 21) and Statements of Changes in Fiduciary Net Position (Page 22). These financial statements report information about the System as a whole, and about its financial condition that should help answer the question: Is the System, as a whole, better or worse off as a result of this year's activities? These statements include all assets and liabilities that are due and payable using the economic resources measurement focus and the accrual basis of accounting. Under the accrual basis of accounting, all revenues and expenses are taken into account regardless of when cash is received or paid.

The Statements of Fiduciary Net Position present all of the System's assets and liabilities, with the difference between the two reported as the net position. Over time, increases and decreases in the net position measure whether the System's assets available for benefits is improving or deteriorating. The Statements of Changes in Fiduciary Net Position present how the System's net position changed during the most recent fiscal year. These two sets of financial statements should be reviewed along with the Notes to the Financial Statements, and the Required Supplementary Information (RSI), including, the Schedule of Changes in Net Pension Liability, the Schedule of Employer Contributions, the Schedule of Investment Returns, and the Notes to the RSI, to determine whether the System is becoming financially stronger or weaker and to understand changes over time in the funded status of the System.

Management's Discussion and Analysis, continued

FINANCIAL ANALYSIS

The System's overall funding objective is to accumulate sufficient assets over time to meet its long-term benefit obligations as they become due.

The System's assets exceeded its due and payable liabilities at the close of FY 2019 and FY 2018 by $2.794 billion and $2.788 billion, respectively. In FY 2019, the net position restricted for pension benefits increased 0.2% or $6.3 million from FY 2018. In FY 2018, the net position restricted for pension benefits increased 3.7% or $100.2 million from FY 2017.

The following table illustrates a condensed version of the Combined Statements of Fiduciary Net Position and Changes in Fiduciary Net Position for the System, Plan A and Plan B for fiscal years ending June 30, 2019, 2018 and 2017.

BALTIMORE COUNTY EMPLOYEES' RETIREMENT SYSTEM
FIDUCIARY NET POSITION
AS OF JUNE 30, 2019, 2018 AND 2017
(*IN THOUSANDS*)

THE SYSTEM

	FY 2019	FY 2018	FY 2017	2019-2018 % Change	2018-2017 % Change
Assets					
Cash and short term investments	$ 37,681	$ 38,914	$ 34,349	-3.2%	13.3%
Collateral for loaned securities	10,599	19,308	21,875	-45.1%	-11.7%
Receivables	9,397	14,615	18,837	-35.7%	-22.4%
Investments	2,780,206	2,766,971	2,677,921	0.5%	3.3%
Total assets	2,837,883	2,839,808	2,752,982	-0.1%	3.2%
Liabilities					
Accounts payable and other accrued liabilities	33,376	32,851	43,625	1.6%	-24.7%
Obligations under securities lending	10,599	19,308	21,875	-45.1%	-11.7%
Total liabilities	43,975	52,159	65,500	-15.7%	-20.4%
Net position restricted for pensions	$2,793,908	$2,787,649	$2,687,482	0.2%	3.7%

Management's Discussion and Analysis, continued

BALTIMORE COUNTY EMPLOYEES' RETIREMENT SYSTEM
FIDUCIARY NET POSITION
AS OF JUNE 30, 2019, 2018 AND 2017
(*IN THOUSANDS*)

PLAN A

	FY 2019	FY 2018	FY 2017	2019-2018 % Change	2018-2017 % Change
Assets					
Cash and short term investments	$ 35,592	$ 37,875	$ 32,760	-6.0%	15.6%
Collateral for loaned securities	10,096	18,563	21,227	-45.6%	-12.6%
Receivables	8,421	13,583	17,868	-38.0%	-24.0%
Investments	2,647,222	2,660,331	2,598,667	-0.5%	2.4%
Total assets	2,701,331	2,730,352	2,670,522	-1.1%	2.2%
Liabilities					
Accounts payable and other accrued liabilities	28,564	29,209	40,888	-2.2%	-28.6%
Obligations under securities lending	10,096	18,563	21,227	-45.6%	-12.6%
Total liabilities	38,660	47,772	62,115	-19.1%	-23.1%
Net position restricted for pensions	$ 2,662,671	$ 2,682,580	$ 2,608,407	-0.7%	2.8%

PLAN B

	FY 2019	FY 2018	FY 2017	2019-2018 % Change	2018-2017 % Change
Assets					
Cash and short term investments	$ 2,089	$ 1,039	$ 1,589	101.1%	-34.6%
Collateral for loaned securities	503	745	648	-32.5%	15.0%
Receivables	976	1,032	969	-5.4%	6.5%
Investments	132,984	106,640	79,254	24.7%	34.6%
Total assets	136,552	109,456	82,460	24.8%	32.7%
Liabilities					
Accounts payable and other accrued liabilities	4,812	3,642	2,737	32.1%	33.1%
Obligations under securities lending	503	745	648	-32.5%	15.0%
Total liabilities	5,315	4,387	3,385	21.2%	29.6%
Net position restricted for pensions	$ 131,237	$ 105,069	$ 79,075	24.9%	32.9%

Management's Discussion and Analysis, continued

BALTIMORE COUNTY EMPLOYEES' RETIREMENT SYSTEM
CHANGES IN FIDUCIARY NET POSITION
FOR THE FISCAL YEARS ENDED JUNE 30, 2019, 2018 AND 2017
(IN THOUSANDS)

THE SYSTEM

	FY 2019	FY 2018	FY 2017	2019-2018 % Change	2018-2017 % Change
Additions					
Contributions:					
Employer - Pension Bonds	$ -	$ -	$ 150,000	N/A	N/A
Employer	138,200	128,896	118,155	7.2%	9.1%
Member	48,198	45,697	43,244	5.5%	5.7%
Total contributions	186,398	174,593	311,399	6.8%	-43.9%
Investment income (loss)	111,904	212,292	330,543	-47.3%	-35.8%
Income from securites lending	185	184	203	0.5%	-9.4%
Net investment income (loss)	112,089	212,476	330,746	-47.2%	-35.8%
Total additions	298,487	387,069	642,145	-22.9%	-39.7%
Deductions					
Benefits	283,317	280,832	272,659	0.9%	3.0%
Refunds of contributions	7,786	4,798	5,128	62.3%	-6.4%
Administrative expenses	1,125	1,272	1,511	-11.6%	-15.8%
Fiscal Charges - Pension Bonds	-	-	882	N/A	N/A
Total deductions	292,228	286,902	280,180	1.9%	2.4%
Net increase (decrease)	6,259	100,167	361,965	-93.8%	-72.3%
Net position restricted for pension benefits					
Beginning of year	2,787,649	2,687,482	2,325,517	3.7%	15.6%
End of year	$2,793,908	$2,787,649	$2,687,482	0.2%	3.7%

Management's Discussion and Analysis, continued

BALTIMORE COUNTY EMPLOYEES' RETIREMENT SYSTEM
CHANGES IN FIDUCIARY NET POSITION
FOR THE FISCAL YEARS ENDED JUNE 30, 2019, 2018 AND 2017
(IN THOUSANDS)

PLAN A

	FY 2019	FY 2018	FY 2017	2019-2018 % Change	2018-2017 % Change
Additions					
Contributions:					
Employer - Pension Bonds	$ -	$ -	$ 150,000	N/A	N/A
Employer	131,510	123,028	115,276	6.9%	6.7%
Member	28,564	28,504	28,445	0.2%	0.2%
Total contributions	160,074	151,532	293,721	5.6%	-48.4%
Investment income (loss)	106,413	205,929	321,576	-48.3%	-36.0%
Income from security lending	177	178	198	-0.6%	-10.1%
Net investment income (loss)	106,590	206,107	321,774	-48.3%	-35.9%
Total additions	266,664	357,639	615,495	-25.4%	-41.9%
Deductions					
Benefits	283,043	280,704	272,576	0.8%	3.0%
Refunds of Contributions	2,459	1,539	2,402	59.8%	-35.9%
Administrative Expenses	1,071	1,223	1,468	-12.4%	-16.7%
Fiscal Charges - Pension Bonds	-	-	882	N/A	N/A
Total deductions	286,573	283,466	277,328	1.1%	2.2%
Net increase (decrease)	(19,909)	74,173	338,167	-126.8%	-78.1%
Net position restricted for pension benefits					
Beginning of year	2,682,580	2,608,407	2,270,240	2.8%	14.9%
End of year	$ 2,662,671	$ 2,682,580	$ 2,608,407	-0.7%	2.8%

Management's Discussion and Analysis, continued

BALTIMORE COUNTY EMPLOYEES' RETIREMENT SYSTEM
CHANGES IN FIDUCIARY NET POSITION
FOR THE FISCAL YEARS ENDED JUNE 30, 2019, 2018 AND 2017
(*IN THOUSANDS*)

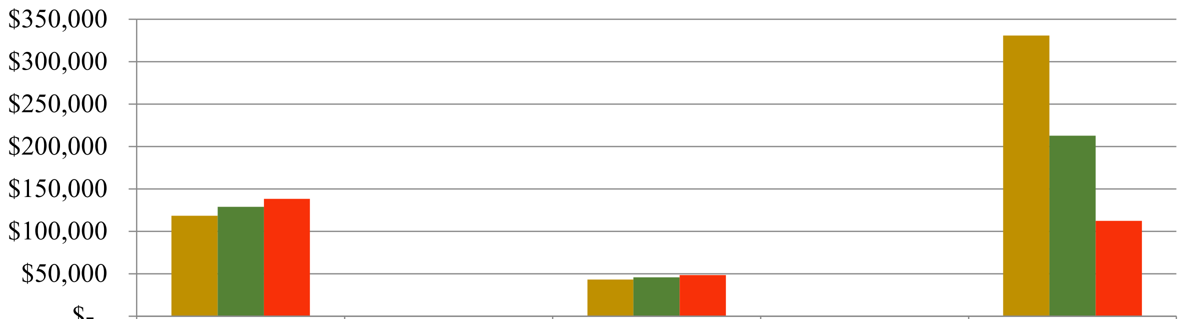
PLAN B

	FY 2019	FY 2018	FY 2017	2019-2018 % Change	2018-2017 % Change
Additions					
Contributions:					
Employer	$ 6,690	$ 5,868	$ 2,879	14.0%	103.8%
Member	19,634	17,193	14,799	14.2%	16.2%
Total contributions	26,324	23,061	17,678	14.1%	30.5%
Investment income (loss)	5,491	6,363	8,967	-13.7%	-29.0%
Income from security lending	8	6	5	33.3%	20.0%
Net investment income (loss)	5,499	6,369	8,972	-13.7%	-29.0%
Total additions	31,823	29,430	26,650	8.1%	10.4%
Deductions					
Benefits	274	128	83	114.1%	54.2%
Refunds of contributions	5,327	3,259	2,726	63.5%	19.6%
Administrative Expenses	54	49	43	10.2%	14.0%
Total deductions	5,655	3,436	2,852	64.6%	20.5%
Net increase	26,168	25,994	23,798	0.7%	9.2%
Net position restricted for pension benefits					
Beginning of year	105,069	79,075	55,277	32.9%	43.1%
End of year	$ 131,237	$ 105,069	$ 79,075	24.9%	32.9%

Management's Discussion and Analysis, continued

THE SYSTEM

Additions to Fiduciary Net Position
(in Thousands)



	Employer Contributions		Member Contributions		Net Investment Income
2017	$118,155		$43,244		$330,746
2018	$128,896		$45,697		$212,476
2019	$138,200		$48,198		$112,089

ADDITIONS TO FIDUCIARY NET POSITION

The reserves needed to finance retirement benefits are accumulated through the collection of employer and employee contributions and earnings on investments. Employer contributions, employee contributions and net investment income for fiscal years 2019 and 2018 were $298.5 million and $387.1 million, respectively.

Additions for FY 2019 were $298.5 million. Employer contributions for FY 2019 increased by $9.3 million or 7.2% over FY 2018. This increase was due to asset experience based on the actuarial value of assets, the scheduled increase in the unfunded accrued liability, and other factors including experience losses.

Additions for FY 2018 were $387.1 million. Employer contributions (excluding Pension Obligation Bonds) for FY 2018 increased by $10.7 million or 9.1% over FY 2017. This increase was due to the change of discount rate, asset experience (based on the actuarial value of assets), the scheduled increase in amortization contribution, and other factors including experience losses.

The overall System portfolio, calculated using a time-weighted rate of return methodology, returned 4.4% gross of fees for FY 2019. Contributing to these returns were: US equity 7.2%, International equity (0.8%), Domestic Fixed Income 7.1%, Emerging Market Debt 7.7%, GAA Composite 3.7%, Real estate 4.8%, Private Investments 5.4% and Cash 2.3%.

Management's Discussion and Analysis, continued

DEDUCTIONS FROM FIDUCIARY NET POSITION

The deductions include pension payments to members and beneficiaries, refunds of contributions to former members, and the cost of administering the System. Total deductions for FY 2019 increased by 1.9% or $5.3 million over FY 2018 due to the increase in benefit payments and refund of contributions. Total deductions for FY 2018 increased by 2.4% or $6.7 million over FY 2017 due to the increase in benefit payments.

Deductions from Fiduciary Net Position
(in Thousands)

	Pension Benefits		Refunds		Administrative Expenses
2017	$272,659		$5,128		$1,511
2018	$280,832		$4,798		$1,272
2019	$283,317		$7,786		$1,125

RETIREMENT SYSTEM AS A WHOLE

The net position held in trust for pension benefits increased by $6.2 million or 0.2% in FY 2019 over FY 2018. Based on the latest actuarial valuation available, the System's funding ratio, as determined by the County's actuary, was 62.7% as of January 1, 2019 and 63.2% as of January 1, 2018. The Board continues to utilize the concepts of prudent investment management, cost controls and strategic planning.

CONTACTING SYSTEM FINANCIAL MANAGEMENT

This financial report is designed to provide the Retirement Board, our membership, taxpayers, investors, and creditors with a general overview of the System's finances and to demonstrate the System's accountability for the money it receives. If you have any questions about this report or need additional financial information, you may contact the Office of Budget and Finance, Mezzanine, Historic Court House, 400 Washington Avenue, Towson, Maryland 21204 or email ers@baltimorecountymd.gov.

The ERS CAFR may be found online at www.baltimorecountymd.gov/Agencies/budfin/retirement/index.html.

Statements of Fiduciary Net Position
As of June 30, 2019 and 2018
(IN THOUSANDS)

	FY 2019			FY 2018		
	Plan A	**Plan B**	**The System**	**Plan A**	**Plan B**	**The System**
Assets:						
Cash and short term investments	$ 35,592	$ 2,089	**$ 37,681**	$ 37,875	$ 1,039	**$ 38,914**
Collateral for loaned securities	10,096	503	**10,599**	18,563	745	**19,308**
Receivables:						
Accrued interest and dividend income	3,246	161	**3,407**	2,494	98	**2,592**
Receivable for investments sold	4,426	222	**4,648**	10,362	416	**10,778**
Receivables - other	749	593	**1,342**	727	518	**1,245**
Total receivables	8,421	976	**9,397**	13,583	1,032	**14,615**
Investments, at fair value						
U.S. Government and agency securities	86,138	4,327	**90,465**	90,570	3,630	**94,200**
Foreign debt	20,910	1,050	**21,960**	26,407	1,059	**27,466**
Corporate debt	114,376	5,746	**120,122**	92,070	3,691	**95,761**
Stocks	470,527	23,637	**494,164**	538,774	21,597	**560,371**
Bond mutual funds	434,093	21,807	**455,900**	424,690	17,024	**441,714**
Stock mutual funds	816,607	41,022	**857,629**	797,694	31,976	**829,670**
Real estate equity funds	143,076	7,188	**150,264**	147,990	5,932	**153,922**
Private equity funds	161,148	8,095	**169,243**	128,969	5,170	**134,139**
Hedge funds	114	6	**120**	255	10	**265**
Global asset allocation	400,233	20,106	**420,339**	412,912	16,551	**429,463**
Total investments	2,647,222	132,984	**2,780,206**	2,660,331	106,640	**2,766,971**
Total assets	2,701,331	136,552	**2,837,883**	2,730,352	109,456	**2,839,808**
Liabilities:						
Investment expenses payable	3,385	169	**3,554**	3,108	125	**3,233**
Refunds payable	56	3,517	**3,573**	56	2,613	**2,669**
Payable for investments purchased	22,419	1,126	**23,545**	22,527	904	**23,431**
Payable for collateral for loaned securities	10,096	503	**10,599**	18,563	745	**19,308**
Payables - other	2,704	-	**2,704**	3,518	-	**3,518**
Total liabilities	38,660	5,315	**43,975**	47,772	4,387	**52,159**
Net position restricted for pension benefits	$ 2,662,671	$ 131,237	**$ 2,793,908**	$ 2,682,580	$ 105,069	**$ 2,787,649**

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

Statements of Changes in Fiduciary Net Position
For the Years Ended June 30, 2019 and 2018
(*IN THOUSANDS*)

	FY 2019			FY 2018		
	Plan A	Plan B	The System	Plan A	Plan B	The System
Additions						
Contributions:						
Employer	$ 131,510	$ 6,690	**$ 138,200**	$ 123,028	$ 5,868	**$ 128,896**
Member	28,564	19,634	**48,198**	28,504	17,193	**45,697**
Total contributions	160,074	26,324	**186,398**	151,532	23,061	**174,593**
Investment income:						
Net increase/decrease in the fair value of investments	79,356	4,335	**83,691**	184,402	5,633	**190,035**
Interest and dividends	46,592	2,059	**48,651**	42,157	1,501	**43,658**
	125,948	6,394	**132,342**	226,559	7,134	**233,693**
Less: Investment expenses	(19,535)	(903)	**(20,438)**	(20,630)	(771)	**(21,401)**
Investment income	106,413	5,491	**111,904**	205,929	6,363	**212,292**
Securities lending:						
Securities lending income	35	-	**35**	89	2	**91**
Borrower rebates	216	11	**227**	166	7	**173**
Agent fees	(74)	(3)	**(77)**	(77)	(3)	**(80)**
Net income from securities lending	177	8	**185**	178	6	**184**
Total net investment income	106,590	5,499	**112,089**	206,107	6,369	**212,476**
Total additions	266,664	31,823	**298,487**	357,639	29,430	**387,069**
Deductions						
Benefits	283,043	274	**283,317**	280,704	128	**280,832**
Refunds of contributions	2,459	5,327	**7,786**	1,539	3,259	**4,798**
Administrative expenses	1,071	54	**1,125**	1,223	49	**1,272**
Total deductions	286,573	5,655	**292,228**	283,466	3,436	**286,902**
Net increase (decrease)	(19,909)	26,168	**6,259**	74,173	25,994	**100,167**
Net position restricted for pension benefits						
Beginning of year	2,682,580	105,069	**2,787,649**	2,608,407	79,075	**2,687,482**
End of year	$ 2,662,671	$ 131,237	**$ 2,793,908**	$ 2,682,580	$ 105,069	**$ 2,787,649**

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

Notes to Financial Statements

1. Plan Description

The Employees' Retirement System of Baltimore County (the "System") is a cost-sharing multiple-employer defined benefit public employee retirement system that acts as a common investment and administrative agent serving five entities including Baltimore County (the "County") and certain employees of the Baltimore County Board of Education, Baltimore County Board of Library Trustees, the Community College of Baltimore County and the Baltimore County Revenue Authority. The System is not an employer. The System provides retirement, disability and death benefits to plan members and beneficiaries. The authority to establish and maintain the System is specified in Section 5-1-101 of the Baltimore County Code (the "Code").

Separate Plans:
On October 15, 2012, the County Council passed Bill No. 65-12 that formally closed the System for members hired prior to July 1, 2007, now known as members of "Plan A". Members hired on or after July 1, 2007 are members of "Plan B".

The System is considered part of the Baltimore County, Maryland reporting entity and its financial statements are included in the County's basic financial statements as a pension trust fund. The System is fiscally dependent on the County by virtue of the legislative and executive controls exercised with respect to its operations, policies and administrative budget. In accordance with Section 5-1-238 of the Code, responsibility for the proper operation of the System is vested in an eleven-member Board of Trustees (the "Board"), comprised of a combination of ex-officio, appointed and elected representatives. The general administration of the System is vested in the Director of Budget and Finance.

Plan Membership: As of June 30, 2019 and 2018, System membership consisted of:

Membership Status (as of June 30, 2019)	Plan - A* Count	Plan - B Count	Total Count
Inactive plan members and beneficiaries currently receiving benefits	8,185	15	8,200
Inactive plan members entitled, but not yet receiving benefits	409	23	432
Active plan members	4,443	5,267	9,710
Total	13,037	5,305	18,342

*Plan A is closed to new members hired on or after July 1, 2007.

Membership Status (as of June 30, 2018)	Plan - A* Count	Plan - B Count	Total Count
Inactive plan members and beneficiaries currently receiving benefits	8,131	7	8,138
Inactive plan members entitled, but not yet receiving benefits	427	8	435
Active plan members	4,738	4,956	9,694
Total	13,296	4,971	18,267

*Plan A is closed to new members hired on or after July 1, 2007.

Notes to Financial Statements, continued

The following is a brief description of the System's plan provisions. For a more complete description, see the Summary of Plan Provisions included in the Actuarial Section of this report.

Members are designated as classified or merit system employees, part-time employees, non-merit employees, elected officials, department heads, or agency employees. Merit system employees include full-time general employees, police officers, firefighters, deputy sheriffs and correctional officers. Agency employees include the Board of Education, the Board of Library Trustees, the Community College of Baltimore County and the Baltimore County Revenue Authority. Agency employees that are not eligible to participate in the Maryland State Retirement and Pension Systems are entitled to membership in the System. The term “general employees” is hereafter used to refer to both county general employees and agency employees.

System membership is compulsory for merit system employees as a condition of employment, except for those members who were hired at age 55 or over. Merit employees, exclusive of police officers and firefighters, are required to join the System within the first sixty days. Police officers and firefighters are required to join the System as a condition of employment. Waived time is not eligible for buy back.

Part-time employees, non-merit employees, elected officials, department heads, and merit system employees hired at age 55 or over, and agency employees have the option to join the system within sixty days or forfeit the right to join the System. Waived time is not eligible for buy back.

Members hired prior to July 1, 2007 are vested after five years of membership. System members hired on or after July 1, 2007 are vested after ten years of creditable service.

Employees who terminate employment or die in service prior to meeting vesting eligibility are entitled to a refund of their contributions. Interest is credited on member contributions at the rate of 5% per annum. Employers are required to contribute an actuarially determined amount annually to finance the System as specified by Sections 5-1-203 and 5-1-257 of the Code.

Members are eligible for a normal retirement for service based on age and/or years of creditable service. There is no mandatory retirement age for general employees, deputy sheriffs and correctional officers. Firefighters and police officers must retire at age 65 unless approved for continuation of service by the Board on an annual basis.

The County has adopted a Back DROP (the election is made at date of retirement) for Police Officers and Firefighters under which eligible active members may elect to receive a lump sum payment with a 6% bonus at retirement in exchange for a reduced monthly benefit for life. The DROP period is between three and five years, effective with retirements that occurred on or after July 1, 2004. Police Officers and Firefighters hired on or after July 1, 2007 are not eligible to participate in the Back DROP.

The County has adopted a Back DROP (the election is made at date of retirement) for Correctional Officers and Deputy Sheriffs hired prior to July 1, 2007. Eligible active members may elect to receive a lump sum payment at retirement in exchange for a reduced monthly benefit. The Back DROP period is between three and five years, effective with retirements that occur on or after July 1, 2010. Correctional Officers and Deputy Sheriffs hired on or after July 1, 2007 are not eligible to participate in the Back DROP.

Notes to Financial Statements, continued

The County has adopted a Forward DROP (the election is made at least 5 years prior to the date of retirement) for General Employees hired prior to July 1, 2007. Eligible active members may elect to receive a lump sum payment at retirement in exchange for a reduced monthly benefit. The Forward DROP period is between five and ten years, effective with retirements that occur on or after July 1, 2012. A member may opt out of the DROP at any time and the member's benefit shall be treated as if the member had not elected to enter the DROP. General employees hired on or after July 1, 2007 are not eligible to participate in the Forward DROP.

An ordinary disability retirement may be granted to a member who can no longer perform their job due to a non-occupational related injury. Police officers and firefighters ("Group 4") hired prior to July 1, 2007 must have 5 years of creditable service while all other members must have ten years of creditable service. All members must be medically certified as incapacitated for continued performance of their duties. The ordinary disability retirement allowance is determined in accordance with Section 5-1-222 of the Code.

An accidental disability retirement may be granted to a member who has been incapacitated for duty as a result of an occupational related injury. Accidental disability payments are tiered (75%, 66.67%, or 50%), based upon the degree of disability. The accidental disability retirement allowance is determined in accordance with Section 5-1-226 of the Code.

An ordinary death benefit is granted as a result of a member's death from non-occupational causes. A member's designated beneficiary or estate receives a lump sum payment of the member's contributions plus interest. Additionally, after one year of creditable service, the member's designated beneficiary or estate may receive a minimum one-time payment equal to 100% of the member's annual earnable compensation. If a member was eligible for a service retirement or had 15 years of creditable service at the time of death, the spouse, if designated as the beneficiary, may receive a retirement allowance based on service years equivalent to a 100% survivorship option (*Option 2*).

An accidental death benefit is granted as the result of death from an occupational related injury. The dependent beneficiary of a general employee may receive an allowance equal to $66^2/_3$% of average final compensation (AFC) plus their annuity (i.e. employee contributions plus interest). The dependent beneficiary of a firefighter or police officer may receive an allowance equal to 100% of the annual earnable compensation at the time of death plus their annuity. If a member was eligible for a service retirement or had 15 years of creditable service at the time of death, the spouse, if designated as the beneficiary, may receive a retirement allowance based on service years equivalent to a 100% survivorship option (*Option 2*).

Retirement allowances are comprised of an annuity equal to the actuarial equivalent of the accumulated contributions plus a pension which together with the annuity shall provide a total allowance as provided for in the System's plan. The retirement allowance is determined based on the AFC and number of years of creditable service. AFC is defined as the rate of annual earnable compensation during the twelve or thirty-six consecutive calendar months of service, depending upon group and hire date, affording the highest average. The normal retirement for service allowance is determined as follows:

Notes to Financial Statements, continued

Employee designation	Allowance formula for Vested Employees
General employees - Plan A (Hired prior to July 1, 2007)	1.82% of AFC times the number of years of creditable service for: (i) 30 years of creditable service or (ii) Age 65 with 5 years of creditable service or, General employees hired prior to July 1, 2007, retiring at age 60 with less than 30 years of creditable service, will receive a blended benefit, (i.e. 1.82% of AFC times the number of years of creditable service earned prior to July 1, 2007 plus 1.43% of AFC times the number of years of creditable service earned on or after July 1, 2007).
General employees – Plan B (Hired on or after July 1, 2007)	1.43% of AFC times the number of years of creditable service.
Appointed officials	2.5% of AFC times the number of years of creditable service.
Elected officials	5.0% of AFC times the number of years of creditable service. Any Council member who elects to be member of the retirement system on or after February 1, 2010 may not receive a retirement allowance in excess of 60% of the member's AFC.
Firefighters	2.5% of AFC times the number of years of creditable service up to 20 years, plus 2.0% of AFC for each year of creditable service in excess of 20 years, and 3.0% of AFC for each year of creditable service in excess of 30 years for service years on or after July 1, 2007. 2.0% of AFC times the number of years of creditable service – if less than 20 years of creditable service.
Correctional officers and Deputy sheriffs	2.5% of AFC times the number of years of creditable service up to 20 years, plus 2.0% of AFC times the number of years of creditable service in excess of 20 years. If hired prior to July 1, 2007 and age 65 with at least 5 but less than 20 years of creditable service: 1.82% of AFC times the number of years of creditable service. If hired prior to July 1, 2007 and age 60 with less than 20 years of creditable service: 1.82% of AFC times the number of years of creditable service earned prior to July 1, 2007, plus 1.43% of AFC times the number of years of creditable service earned after June 30, 2007. If hired on or after July 1, 2007 with less than 25 years of creditable service at retirement: 1.43% of AFC times the number of years of creditable service.
Police officers	2.5% of AFC times the number of years of creditable service up to 20 years, plus 2.0% of AFC for each year of creditable service in excess of 20 years, and 3.0% of AFC for each year of creditable service in excess of 25 years for service years on or after July 1, 2007. 2.0% of AFC times the number of years of creditable service – if less than 20 years of creditable service.

Notes to Financial Statements, continued

In addition to the maximum retirement allowance, members may select one of six retirement allowance options to provide payments to a beneficiary upon the death of a retired member. A selection of an option reduces the maximum allowance. Police officers and firefighters with at least 25 years of actual service as a sworn Baltimore County Police Officer or sworn Baltimore County Firefighter may select a 7th option that allows 50% of member's retirement to continue to the original beneficiary at no cost to the employee.

In accordance with Section 5-1-235 of the Code, each July 1, post-retirement allowance adjustments may be granted to retirees who have been retired for more than 60 months. Active members hired prior to July 1, 2007 and retire on or after July 1, 2010 must have at least 20 years of creditable service to be eligible for post-retirement COLAs. Active members hired on or after July 1, 2007 must have at least twenty five (25) years of creditable service to be eligible for post-retirement COLAs. For active members who select the DROP program, the eligibility period to receive COLAs in the DROP remains a minimum of 12 months. Once the member actually retires, the eligibility period for a post-retirement COLA is a minimum of 48 months. The post-retirement allowance adjustment is equal to the increase in the Consumer Price Index - All Urban Consumers (CPI-U) for the previous calendar year, in an amount not to exceed 3%, provided sufficient investment income in excess of valuation requirements has accumulated in the Post-Retirement Increase Fund Balance Account described in Note 2. The maximum Post-Retirement Increase Fund Account Balance is equal to twice the cost of a 3% COLA. Additional details regarding cost-of-living increases may be found in the Summary of Plan Provisions under the heading Post-Retirement Allowance Increases.

2. Summary of Significant Accounting Policies and Plan Asset Matters

Basis of Accounting - The financial statements of the System are presented using the economic resource measurement focus and the accrual basis of accounting. Plan member contributions are recognized in the period in which the contributions are due. Employer contributions are recognized when due and a formal commitment to provide the contributions has been made. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan.

The System records investment purchases and sales on a trade-date basis. These transactions are not finalized until settlement date. Cash received as collateral on securities lending transactions and investments made with such cash are reported as assets along with a related liability for collateral received.

Method Used To Value Investments - Plan investments are reported at fair value. Securities traded on national or international exchanges are valued at the last reported sales price at current exchange rates. The fair value of real estate equity funds is based on independent appraisals. The fair value of mutual funds is based on the fair value of the underlying securities. Hedge Fund-of-Funds are valued based on information provided by the respective fund managers. The fair value for alternative investments which include private equity funds is based upon the partnership's most recent available financial information. For more information on fair value measurement, please refer to Note 4, Cash deposits, Investments and Securities Lending.

Administrative Costs - The System pays for the following administrative expenses: professional actuarial costs, pension consultant fees, data processing, medical board examinations, salaries, benefits, audit/legal fees, equipment and supplies, postage, printing and miscellaneous expenses. These administrative expenses are funded from employer contributions.

Net Position Accounts - As provided by the Code, all assets of the System must be credited according to the purpose for which they are held to the annuity savings fund, the pension accumulation fund or the post-retirement increase fund.

Notes to Financial Statements, continued

These funds are classified together as the net position held in trust for pension benefits for financial reporting purposes and are explained below:

Annuity Savings Fund Balance Account - This Account records the accumulated contributions credited to individual members' accounts together with the interest thereon. Upon termination of employment, accumulated contributions plus interest are refunded from this account. When a member retires, the member's accumulated contributions plus interest are transferred to the Pension Accumulation Fund Balance Account.

Pension Accumulation Fund Balance Account - This Account records all accumulated reserves used to pay member pensions, other benefits and administrative expenses. The reserves are accumulated from employer contributions, investment income, gains on sales of investments and amounts transferred from the Annuity Savings Fund Balance Account when a member retires.

Post-Retirement Increase Fund Balance Account - This Account records all investment earnings in excess of valuation requirements transferred from the Pension Accumulation Fund Balance Account in order to finance post-retirement allowance increases to retired members.

At June 30, 2019 and 2018, the balances in the legally required accounts are as follows:

	FY 2019 (in Thousands)	**FY 2018** (in Thousands)
Annuity Savings Fund	$617,706	$593,375
Pension Accumulation Fund	2,174,407	2,175,505
Post-Retirement Increase Fund	1,795	18,769
Net Position Held in Trust for Pension Benefits	$2,793,908	$2,787,649

3. Contributions

System members contribute a percentage of their salary to the System as determined by County Code. The contribution rates for members are based on employee classification. A chart of member contribution rates is provided in the Summary of Plan Provisions in the Actuarial Section of this report. The County and the participating employers intend to fund the System according to the actuarially determined employer contributions (ADEC). The ADEC is equal to the normal cost plus amortization of the unfunded actuarial accrued liability. The employer contributions to the System are equal to 100% of the ADEC. Per Section 5-1-203 of the Code, contribution requirements of the plan members and the participating employers are established and may be amended by the Board.

4. Cash Deposits, Investments and Securities Lending

Custodial Credit Risk - For Cash Deposits, Investments and Securities Lending, custodial credit risk is the risk that, in the event of the failure of the bank or counterparty, the System will not be able to recover the deposits, value of its investments or collateral securities that are in possession of an outside party. The System cash deposits are fully covered by FDIC insurance and/or collateral pledged to the System's account held by the System's agent in the System's name at year-end. The collateral pledged and held consists of obligations issued by the U.S. government and agencies.

Investment securities are registered in the name of the System. As of June 30, 2019, and 2018 the carrying amount of cash was $1.2 million and $8.3 million, respectively.

Notes to Financial Statements, continued

Investment Policy - Pursuant to Section 5-1-247 of the Baltimore County Code, the Board of Trustees utilizes the "prudent person" standard for managing the assets of the System. The Board has established the following policies:

1) Assure that the System's investment policy has been designed to provide broad diversification among asset classes in order to maximize return at an appropriate level of risk and minimize the risk of large losses to the System.

2) Employ a diversity of investment managers with different investment styles on how to obtain their investment objective.

3) Closely monitor the performance of all investment managers not only in relation to specific objectives, but also in relation to other fund managers following the same investment objectives.

The System is currently invested in stocks (domestic and foreign), fixed income securities, private equity funds, real estate funds, and global asset allocation funds. During FY 2016, the Board phased out the allocations to hedge fund-of-funds and eliminated the allocation of real assets. The Code provides for full power to hold, purchase, sell, assign, transfer and dispose of any of the securities and investments in any of the System's funds.

For the year ended June 30, 2019 and 2018, the System has operated in all material respects in accordance with the System's investment policy.

The System's investment policy as of June 30, 2019 and 2018, are shown below for the broad investment categories:

Asset Class – FY2019	***Allocation Target***	***Allocation Range***
U. S. Equities	*26%*	*20 - 30%*
International Equities	*24%*	*20 - 30%*
Private Equities	*7%*	*0 - 9%*
Fixed Income	*26%*	*20 - 30%*
Real Estate	*5%*	*0 - 7%*
Global Asset Allocation	*12%*	*7 - 17%*
Cash and Cash equivalents	*0%*	*0 - 5%*
Total	***100%***	

Asset Class- FY2018	***Allocation Target***	***Allocation Range***
U. S. Equities	*24%*	*19 - 29%*
International Equities	*25%*	*20 - 30%*
Private Equities	*7%*	*0 - 9%*
Fixed Income	*24%*	*19 - 29%*
Real Estate	*5%*	*0 - 7%*
Global Asset Allocation	*15%*	*10 - 20%*
Cash and Cash equivalents	*0%*	*0 - 5%*
Total	***100%***	

Notes to Financial Statements, continued

Rate of Return - For the years ended June 30, 2019 and 2018, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 3.6% and 8.1%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

Interest Rate Risk - The investment policy guidelines of the Employees' Retirement System of Baltimore County do not specifically address limits on maturities as a means of managing its exposure to fair value losses arising from changing interest rates. The manager of each fixed income portfolio is responsible for determining the average maturity of their portfolio. The following is a maturity schedule of the System's fixed income investments of bonds and short term investments as of June 30, 2019 and 2018.

Investment Maturities (in Years)
FY 2019
(Expressed in Thousands)

Investment Type	Fair Value	Less than 1	1 - 4.9	5 - 9.9	10-19.9	20-30	More Than 30
U.S. Govt. Obligations	$ 45,404	$ 8,822	$ 8,778	$ 6,693	$ 2,829	$ 18,227	$ 55
U.S. Agency Securities	45,061	19,287	7,788	3,940	2,072	11,388	586
Municipals debt	-	-	-	-	-	-	-
Corporate debt	120,122	44,458	47,618	11,139	2,505	10,233	4,169
Bond Mutual Funds	455,900	-	179,747	276,153	-	-	-
Foreign debt	21,960	9,380	7,737	2,943	632	882	386
Total	$ 688,447	$ 81,947	$ 251,668	$ 300,868	$ 8,038	$ 40,730	$ 5,196

Investment Maturities (in Years)
FY 2018
(Expressed in Thousands)

Investment Type	Fair Value	Less than 1	1 - 4.9	5 - 9.9	10-19.9	20-30	More Than 30
U.S. Govt. Obligations	$ 59,977	$ 8,351	$ 13,188	$ 22,061	$ 2,037	$ 14,222	$ 118
U.S. Agency Securities	34,223	11,591	8,884	5,120	2,398	5,317	913
Corporate debt	95,761	24,570	46,841	6,401	3,032	9,487	5,430
Bond Mutual Funds	441,714	-	-	441,714	-	-	-
Foreign debt	27,466	13,025	7,909	3,731	1,165	1,330	306
Total	$ 659,141	$ 57,537	$ 76,822	$ 479,027	$ 8,632	$ 30,356	$ 6,767

Credit Risk - The System's investment policy is to apply the prudent-person rule: Investments are made as a prudent person would be expected to act with discretion and intelligence, to seek reasonable income, preserve capital and in general, avoid speculative investments. Investments in high yield securities are limited to 20% in the guidelines for core plus fixed income manager Western Asset Management, and 15% for Reams Asset Management. PIMCO Diversified Fixed Income Fund target 1/3 of their portfolio in high yield securities. Loomis Sayles Strategic Alpha Trust has long/short exposure in net non-investment grade securities of +/- 50%. Stone Harbor may invest up to 100% of their portfolio in high yield securities.

Notes to Financial Statements, continued

As of June 30, 2019 and 2018, the System's fixed income investments had the following credit risk characteristics:

	FY 2019			FY 2018	
Moody's Ratings or Comparable	**Fair Value (*in Thousands*)**	**Percent of Fixed Income Investments**		**Fair Value (*in Thousands*)**	**Percent of Fixed Income Investments**
AAA	$ 92,786	13.5%		$ 97,430	14.8%
AA	10,728	1.6		8,948	1.4
A	60,016	8.7		45,697	6.9
BBB	36,791	5.3		31,913	4.8
BB	5,038	0.7		6,285	1.0
B	129	0.0		652	0.1
CCC	318	0.1		803	0.1
CC	180	0.0		1,418	0.2
NR*	482,461	70.1		465,995	70.7
Total	$ 688,447	100.0%		$ 659,141	100.0%

*NR represents securities not rated, primarily made up of swaps and commingled funds, which by their nature do not have credit quality ratings.

Investments in Excess of 5% of the Net Position Held in Trust for Pension Benefits - The System had no individual investments at fair value in excess of 5% of the System's net position held in trust for pension benefits as of June 30, 2019 and 2018.

Derivative Policy:

As permitted by guidelines established by the Board of Trustees the System may invest in Derivatives.

A derivative is a security or contractual agreement, which derives its value from some underlying security, commodity, currency, or index.

1. Types of derivative contracts
   a. Forward-based derivatives, including forward contracts, futures contracts, swaps, and similar instruments, and
   b. Option-based derivatives, including put options, call options, interest rate caps and floors, and similar instruments.

2. Types of Derivative Securities
   a. Collateralized Mortgage Obligations (CMOs)
   b. Structured Notes

3. Domestic Debt Securities are permitted and may include U.S. Government and Agency obligations, corporate bonds, asset backed securities, agency guaranteed mortgage pass-through securities and low risk collateralized mortgage obligations of comparable or lower risk, such as Planned Amortizations Class Level 1 and sequentials, commercial paper, and certificates of deposit. Managers may also invest in U.S. dollar denominated issues of international agencies, foreign governments and foreign corporations (i.e., Eurodollar and Yankee bonds.

4. Futures and Options strategies may be employed, upon specific authorization of the Board, on equity and fixed income investments to provide volatility protection or enhance the rate of return over time.

Notes to Financial Statements, continued

5. Where appropriate, managers may use derivative contracts for the following reasons:
   a. Hedging. To the extent that the portfolio is exposed to clearly defined risks and there are derivative contracts that can be used to reduce those risks, the investment managers are permitted to use such derivatives for hedging purposes, including cross hedging of currency exposures.
   b. Creation of Market Exposures. Managers are permitted to use derivatives to replicate the risk/return profile of an asset or asset class provided that the guidelines for the Manager allow for such exposures to be created with the underlying assets themselves.

6. The following two uses of derivative contracts and securities are strictly prohibited:
   a. Leverage. Derivatives shall not be used to magnify overall portfolio exposure to an asset, asset class, interest rate, or any other financial variable beyond that which would be allowed by a portfolio's investment guidelines if derivatives were not used.
   b. Unrelated speculation. Derivatives shall not be used to create exposures to securities, currencies, indices, or any other financial variable unless such exposures would be allowed by a portfolio's investment guidelines if created with non-derivative securities.

The System utilizes certain derivative instruments for the purpose of obtaining income or profit. The derivatives are subject to credit risks, interest rate risk, and foreign currency risk. Classified and aggregated by type, the fair value balances and notional amounts of derivative instruments outstanding at June 30, 2019 and 2018, and the changes in fair value of such derivative instruments for the year then ended are as follows:

	Changes in Fair Value (*in Thousands*)			**Fair Value as of June 30, 2019 (*in Thousands*)**	
Investment Derivatives:	**Classification**	**Amount**		**Amount**	**Notional Value**
Futures	Investment Revenue	$ -		$ 333	$ 18,098
Options	Investment Revenue	47		(13)	562
Swaps	Investment Revenue	(286)		(124)	(401)
TBA Transactions	Investment Revenue	9		14,360	14,360

	Changes in Fair Value (*in Thousands*)			**Fair Value as of June 30, 2018 (*in Thousands*)**	
Investment Derivatives:	**Classification**	**Amount**		**Amount**	**Notional Value**
Futures	Investment Revenue	$ -		$ 30	$43,658
Options	Investment Revenue	(4)		(27)	(705)
Swaps	Investment Revenue	(24)		(36)	8,109
TBA Transactions	Investment Revenue	38		10,819	10,819

Notes to Financial Statements, continued

Foreign Currency Risk - The System's exposure to foreign currency risk is derived from its positions in foreign currency-denominated common stock and fixed income investments. Managers are allowed to use derivatives to hedge out foreign currency; however, there is no formal policy regarding foreign currency risk. The Systems exposure to foreign currency risk as of June 30, 2019 and 2018 is as follows:

Currency	FY 2019 Fair Value (*in Thousands*)	FY 2018 Fair Value (*in Thousands*)
Australian Dollar	$ 7,463	$ 8,340
Brazil Real	346	389
Canadian Dollar	2,658	1,941
Danish Krone	738	3,557
Euro Currency Unit	73,833	81,742
Hong Kong Dollar	16,890	16,464
Israeli Shekel	479	740
Japanese Yen	51,288	58,752
New Taiwan Dollar	1,327	1,542
New Zealand Dollar	0	218
Norwegian Krone	1,467	1,942
Polish Zloty	374	275
Pound Sterling	24,068	26,639
Singapore Dollar	4,449	3,734
South African Rand	668	774
South Korean Won	7,974	8,310
Swedish Krona	8,657	6,308
Swiss Franc	11,917	9,851
Thailand Baht	0	242
Turkish Lira	235	232
Total	$ 214,831	$ 231,992

Securities Lending Transactions **-** The Board's policies permit the System to lend its securities to broker-dealers and other entities with a simultaneous agreement to return the collateral for the same securities in the future. The System's custodian lends U.S. government and agency securities, corporate bonds and stocks for collateral in the form of cash, other securities and irrevocable bank letters of credit. Collateral securities, letters of credit and cash are initially pledged at 102% of the fair value of the securities lent. Additional collateral is to be provided by the next business day if the collateral value falls to less than 100% of the fair value of the securities lent. The System did not impose any restrictions during the fiscal year on security loans the custodian made on its behalf. At June 30, 2019, the System had no credit risk exposure to borrowers because the amounts the System owes the borrowers exceed the amounts the borrowers owe the System. The relationship between the maturities of the investment pool and the System's loans is affected by the maturities of the security loans made by other entities that use the agent's pool, which the System cannot determine. The System cannot pledge or sell collateral securities received unless the borrower defaults. All securities loans can be terminated on demand by either the System or the borrower. Cash collateral is invested in both a separately managed fixed income account and a cash collateral pool, which at year-end had a weighted-average maturity of 1.57 days. The collateral held as of June 30, 2019 and 2018 was $72.9 million and $114.4 million, respectively. The fair value of securities on loan as of June 30, 2019 and 2018 totaled $71.6 million and $111.9 million, respectively.

Notes to Financial Statements, continued

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

FY 2019 Securities Lent for:	Fair Value of Loaned Securities	Collateral Fair Value	Percent Collateralized
Cash Collateral	$9,953	$10,599	106.49%
Non-Cash Collateral	61,658	62,316	101.70%
Total	$71,611	$72,915	101.82%

FY 2018 Securities Lent for:	Fair Value of Loaned Securities	Collateral Fair Value	Percent Collateralized
Cash Collateral	$18,645	$19,308	103.56%
Non-Cash Collateral	93,262	95,122	101.99%
Total	$111,907	$114,430	102.26%

Fair Value Measurement - Investments measured and reported at fair value are classified according to the following hierarchy:

Level 1 – Investments reflect quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 – Investments reflect prices (other than quoted prices) that are observable for the asset or liability, whether directly or indirectly, which may include inputs in markets that are not considered to be active.

Level 3 – Investments reflect prices based upon unobservable sources, when there is little, if any market activity.

The categorization of investments within the hierarchy is based upon the pricing transparency of the instrument and should not be perceived as the particular investment's risk.

Debt, equities, and investment derivatives classified in Level 1 of the fair value hierarchy are valued based on prices quoted in active markets for those securities, such as the New York Stock Exchange or the Nasdaq stock market. Investments classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique, which is based on the securities' relationship to benchmark quoted prices. 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. Securities classified in Level 3 of the fair value hierarchy, are valued using unobservable inputs for the asset or liability.

Notes to Financial Statements, continued
Investment Valuation - June 30, 2019
(Expressed in thousands)

The following table presents the System's recurring fair value measurements as of June 30, 2019.

INVESTMENT VALUATION - THE SYSTEM

		Fair Value Measurement Using		
Investments by Fair Value Level	Fair Value	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	$ 43,568	$ 39,534	$ 4,034	$ -
U.S. Securities and Agencies	32,366	-	32,366	-
Municipal debt	-	-	-	-
Corporate debt	120,084	-	117,785	2,299
Foreign debt	21,973	-	15,155	6,818
Total Debt Securities	217,991	39,534	169,340	9,117
Equity Securities:				
Domestic	278,618	278,618	-	-
International	215,546	215,546	-	-
Total Equity Securities:	494,164	494,164	-	-
Securities Lending Cash Collateral	10,599	-	10,599	-
Investments Derivative Instruments:				
Futures	$ 333	$ 333	$ -	$ -
Options	(13)	(13)	-	-
Swaps	(124)	-	(124)	-
TBAs	14,360	-	14,360	-
Total Investments Derivative Instruments	$ 14,556	$ 320	$ 14,236	$ -
Total Investments by Fair Value Level	$ 737,310	$ 534,018	$ 194,175	$ 9,117
Investments Measured at the Net Asset Value (NAV):				
Commingled Fixed Income Funds	$ 455,900			
Commingled Domestic Equity	410,811			
Commingled International Equity	446,818			
Real Estate Funds	150,264			
Hedge Fund of Funds	120			
Private Equity Funds	169,243			
Global Asset Allocation	420,339			
Total Investments Measured at the NAV	$ 2,053,495			
Total Investments and Collateral for Loaned Securities	$ 2,790,805			

Notes to Financial Statements, continued

Investment Valuation - June 30, 2018
(expressed in thousands)

The following table presents the System's recurring fair value measurements as of June 30, 2018.

INVESTMENT VALUATION - THE SYSTEM

		Fair Value Measurement Using		
Investments by Fair Value Level	Fair Value	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	$ 56,980	$ 53,720	$ 3,260	$ -
U.S. Securities and Agencies	26,365	-	26,365	-
Municipal debt	-	-	-	-
Corporate debt	95,707	-	95,707	-
Foreign debt	27,589	-	16,317	11,272
Total Debt Securities	206,641	53,720	141,649	11,272
Equity Securities:				
Domestic	327,184	327,184	-	-
International	233,187	233,187	-	-
Total Equity Securities:	560,371	560,371	-	-
Securities Lending Cash Collateral	19,308	-	19,308	-
Investments Derivative Instruments:				
Futures	$ 30	$ 30	$ -	$ -
Options	(27)	(26)	(1)	-
Swaps	(36)	-	(36)	-
TBAs	10,819	-	10,819	-
Total Investments Derivative Instruments	$ 10,786	$ 4	$ 10,782	$ -
Total Investments by Fair Value Level	$ 797,106	$ 614,095	$ 171,739	$ 11,272
Investments Measured at the Net Asset Value (NAV):				
Commingled Fixed Income Funds	$ 441,714			
Commingled Domestic Equity	393,839			
Commingled International Equity	435,831			
Real Estate Funds	153,922			
Hedge Fund of Funds	265			
Private Equity Funds	134,139			
Global Asset Allocation	429,463			
Total Investments Measured at the NAV	$ 1,989,173			
Total Investments and Collateral for Loaned Securities	$ 2,786,279			

Notes to Financial Statements, continued

Investments in Entities That Calculate Net Asset Value Per Share

The fair values of investments in certain equity, fixed income, and marketable alternatives funds are based on the investments' net asset value (NAV) per share (or its equivalent) of the System's ownership interest in the partners' capital provided by the investee. The fair values of investments in certain private equity funds have been determined using recent observable transaction information for similar investments and nonbinding bids received from potential buyers of the investments. The following table presents the System's unfunded commitments, redemption terms and investments measured at the NAV as of June 30, 2019.

Investments Measured at the NAV (expressed in thousands)	Fair Value	Strategy Type	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Loomis Sayes Strategic Alpha	$ 92,653	Absolute Reurn	-	Semi-monthly	15 days
Pimco Diversified Income	161,237	Global, High Yield , Emg. Mkt.	-	Daily	1 day
Stone Harbor Local Market	114,915	Emerging Market Debt	-	Daily	1 day
Guggenheim Investments	52,228	Bank Loans	-	Monthly	21 days
Pacific Asset Management	34,867	Bank Loans	-	Monthly	30 days
(a) Commingled Fixed Income Funds	455,900				
Benchmark	32,422	Portable Alpha	-	Annually	90 days
Blackrock US Equity	378,389	Wilshire 5000 Index	-	Daily	3 days
(b) Commingled Domestic Equity	410,811				
Blackrock ACWI Ex-US	170,912	All Country World Ex US Index	-	Daily	5 days
Mondrian Emerging Markets	138,183	Emerging Market Equity	-	Monthly	15 days
Strategic Global Advisors	32,039	MSCI World Ex USA Small Cap	-	Daily	5 days
LMCG Investments	34,188	Emerging Mkt Equity - Small Ca	-	Monthly	5 days
Metis International Small Cap	26,476	International Equity - Small Ca	-	Monthly	30 Days
Invesco Emerging Mkts Innovators	45,020	Emerging Mky Equity - Small Ca	-	Daily	5 days
(c) Commingled International Equity	446,818				
JP Morgan	50,007	Value Added Real Estate	-	Monthly	15 days
Clarion Lion	48,901	Core Real Estate	-	Quarterly	90 days
UBS Real Estate	51,356	Core Real Estate	-	Quarterly	60 days
(d) Real Estate Funds	150,264				
EIM Management Alternative					
(e) Hedge Fund of Funds	120	Hedge Fund-of-Funds	-	Monthly	30 days
(f) Private Equity Funds	169,243	Private Equity	$154,695	N/A	N/A
Bridgewater All Weather	143,611	Risk Parity	-	Monthly	5 days
Mellon EB DV Global Alpha 1	135,446	Global Asset Allocation	-	Daily	3 days
Wellington Opportunistic	141,282	Global Asset Allocation	-	Monthly	30 days
(g) Global Asset Allocation	420,339				
Total Investments Measured at NAV	$2,053,495				

Notes to Financial Statements, continued

The following table presents the System's unfunded commitments, redemption terms and investments measured at the NAV as of June 30, 2018.

Investments Measured at the NAV (expressed in thousands)	Fair Value	Strategy Type	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Loomis Sayes Strategic Alpha	$ 87,366	Absolute Reurn	-	Semi-monthly	15 days
Pimco Diversified Income	168,335	Global, High Yield , Emg. Mkt.	-	Daily	1 day
Stone Harbor Local Market	104,660	Emerging Market Debt	-	Daily	1 day
Guggenheim Investments	48,764	Bank Loans	-	Monthly	21 days
Pacific Asset Management	32,589	Bank Loans	-	Monthly	30 days
(a) Commingled Fixed Income Funds	441,714				
Benchmark	37,738	Portable Alpha	-	Annually	90 days
Blackrock US Equity	356,101	Wilshire 5000 Index	-	Daily	3 days
(b) Commingled Domestic Equity	393,839				
Blackrock ACWI Ex-US	163,932	All Country World Ex US Index	-	Daily	5 days
Mondrian Emerging Markets	237,381	Emerging Market Equity	-	Monthly	15 days
Strategic Global Advisors	34,518	MSCI World Ex USA Small Cap			
(c) Commingled International Equity	435,831				
Aslan Realty Partners	54	Opportunistic Real Estate	-	N/A	N/A
JP Morgan	45,958	Value Added Real Estate	-	Monthly	15 days
Clarion Lion	54,531	Core Real Estate	-	Quarterly	90 days
UBS Real Estate	53,379	Core Real Estate	-	Quarterly	60 days
(d) Real Estate Funds	153,922				
EIM Management Alternative	205	Hedge Fund-of-Funds	-	Monthly	30 days
Federal Street Offshore	60	Hedge Fund-of-Funds	-	Quarterly	65 days
(e) Hedge Fund of Funds	265				
(f) Private Equity Funds	134,139	Private Equity	$147,665	N/A	N/A
Bridgewater All Weather	147,584	Risk Parity	-	Monthly	5 days
Mellon EB DV Global Alpha 1	126,842	Global Asset Allocation	-	Daily	3 days
Wellington Opportunistic	155,037	Global Asset Allocation	-	Monthly	30 days
(g) Global Asset Allocation	429,463				
Total Investments Measured at NAV	$1,989,173				

Notes to Financial Statements, continued

Investments measured at the NAV above comprise of the following:

(a) Commingled Fixed Income Funds – These include investments in five funds, utilizing a variety of strategies which include Absolute Return; High Yield Debt; Emerging Market Debt, and Bank Loans. The redemption notice period for two of the funds is one day, and for the other three funds fifteen, twenty one and thirty days. Two of the funds may be redeemed daily, one fund may be redeemed semi-monthly, and the other two funds may be redeemed monthly. The fair value of the investments in this type has been determined using the NAV per share (or its equivalent) of the investments.

(b) Commingled Domestic Equity Funds – These include two funds with investments in U.S. common stocks. The strategy type employed are Portable Alpha and the Wilshire 5000 index. The fund utilizing the Portable Alpha strategy may only be redeemed annually with a redemption notice period of ninety days. The fund utilizing the Wilshire 5000 index strategy may be redeemed daily with a redemption notice period of three days. The fair value of the investments in this type has been determined using the NAV per share (or its equivalent) of the investments.

(c) Commingled International Equity Funds – This type includes six funds. One of the funds utilizes the International Equity Index, with a daily redemption frequency and a redemption notice period of four days. One fund utilize an Emerging Market Equity strategy with a monthly redemption frequency and a redemption notice period of fifteen days. Two funds utilizes the International Equity Small Cap index strategy with a daily redemption frequency and a redemption notice period of five days, and a monthly redemption frequency and a redemption notice period of 30 days, respectively. The other two funds utilize an Emerging Market Equity- Small Cap strategy with a daily redemption frequency and a redemption notice period of five days, and a monthly redemption frequency and a redemption notice period of 30 days, respectively. The fair value of the investments in this type has been determined using the NAV per share (or its equivalent) of the investments.

(d) Real Estate Funds – This includes investments in three funds in U.S. commercial real estate. The strategy type for two of these funds is Core Real Estate and the third fund employs a Value Added Real Estate strategy. The fair value of the investments in this type has been determined using the NAV per share (or its equivalent) of the investments.

(e) Hedge Fund-of-Funds – This includes one fund invested in Hedge Fund of Funds. The funds is in liquidation. The fair value of the investments in this type has been determined using the NAV per share (or its equivalent) of the investments.

(f) Private Equity Funds – These investments are not publicly traded on a stock exchange. The investment consists of thirty-nine private equity funds in FY2019 and thirty-eight private equity funds in FY2018. The outstanding commitments were $154,695,000 and $147,665,000 in FY 2019 and FY 2018, respectively. These investments cannot be redeemed with the funds. Instead, the nature of the investments in this type is that distributions are received through the liquidation of the underlying assets of the fund. If these investments were held, it is expected that the underlying assets of the fund would be generally liquidated over ten years. The fair values of the investments in these private equity funds have been determined using the NAV per share (or equivalent) of the primary government's ownership interest in partners' capital.

Notes to Financial Statements, continued

(g) Global Asset Allocation – This investment type includes three funds. One fund utilizes the Risk Parity strategy, and the other two funds employ a Global Tactical Asset Allocation strategy. The strategy is employed to balance risk by investing in a variety of asset classes through active management. Funds may be invested in global equities, bonds and commodities. One fund allows daily redemptions with a redemption notice period of three days. The other two funds allow only monthly redemptions. The redemption period is five and thirty days, respectively. The fair value of the investments in this type has been determined using the NAV per share (or its equivalent) of the investments.

5. Risk Management

The County bears any risk of loss related to the System (e.g. torts, theft of, damage to, or destruction of assets; errors or omissions, job-related illnesses, or injuries to employees; and natural disasters). The County manages its risks internally and sets aside assets for claims settlement in an internal service fund.

6. Litigation

A significant outstanding claim against Baltimore County has the potential to impact members' contributions to the Employees' Retirement System of Baltimore County. The U.S. Equal Employment Opportunity Commission (EEOC) has sued Baltimore County claiming it violated the Age Discrimination in Employment Act (ADEA) by requiring employees who joined the retirement system as older workers to contribute more than workers who joined at a younger age. The United States District Court for the District of Maryland granted Baltimore County's Motion for Summary Judgment on January 21, 2009. The Fourth Circuit Court of Appeals reversed and remanded the case to the District Court. By Order entered on October 17, 2012, the District Court reversed itself and found the County liable for age discrimination. After the District Court granted the County permission to file an interlocutory appeal, the Fourth Circuit affirmed the liability determination of the District Court on March 31, 2014. The Supreme Court denied the County's Petition for Writ of Certiorari on November 3, 2014 and the case was remanded to the District Court for a determination of damages. On April 27, 2016, the court entered a Joint Consent Order Regarding Injunctive Relief, which resolved EEOC's claim for injunctive relief. On that same day, the court ordered the parties to submit briefs on the question of whether EEOC was entitled to any retroactive or prospective damages for claimed "excess contributions" by older members. The court conducted a hearing on July 29, 2016 to determine that issue. On August 24, 2016, the Court issued an order denying EEOC's Motion for Determination on Availability of Retroactive and Prospective Monetary Relief for the "excess contributions," and held specifically that "[n]either retroactive nor prospective monetary relief is available in this case," and closed the case. The EEOC filed an appeal from the order to the United States Court of Appeals for the Fourth Circuit. The appeal was heard on October 26, 2017. On September 19, 2018, the Court issued a published Per Curium Opinion vacating the opinion of the District Court and remanding the case "for a determination of the amount of back pay to which the affected employees are entitled under the ADEA." On December 13, 2018, the County filed a petition for writ of certiorari requesting the Supreme Court of the United States to review the Fourth Circuit's decision. On June 17, 2019, the Supreme Court denied review. The case was remanded to District Court. The District Court has determined the class period and scope of the class. A jury trial on damages is scheduled for May 2020.

Notes to Financial Statements, continued

6. Litigation, continued

There is a class action case brought by current and former employees who claim that the County miscalculated their pension benefits. Plaintiffs are all former state employees who transferred their time in the state system over to the County's pension system when they came to work with Baltimore County. The dispute is over an interpretation of Maryland state law concerning the interest rate the County was allowed to use when calculating the proper reduction in benefits these employees will get because they did not contribute to the County's pension system in the years they were working for the state. All of the Baltimore County Circuit Court judges recused themselves from hearing this case and it was transferred to Harford County, Maryland. The parties are currently attempting to agree on the definition of who the class or classes of plaintiffs will be. The case will then be briefed by both sides and it is anticipated that the court will then make a ruling on what the proper calculation and methodology should be and damages, if any, will be calculated at that point. It is believed that over 100 current and former employees may be included in the class so aggregate damages of several million dollars are reasonably possible.

7. Deferred Retirement Option Program (DROP)

Effective July 1, 2007, General employees hired prior to July 1, 2007, are offered a Forward DROP. The DROP allows eligible general employees to elect to receive a lump sum payment at retirement in exchange for a reduced monthly benefit. The DROP period is a minimum of 5 years and a maximum of 10 years. Eligibility is age 55 plus a total of age and service of at least 85. The DROP account will include benefit payments at the maximum option, employee contributions, an interest credit of 5%, plus any cost of living increase granted to retirees, provided the member has been in the DROP for at least 12 months. As of June 30, 2019 and 2018, the balance of the System's DROP allowance for General employees' was $38.8 and $34.4 million, respectively, and DROP payables were $2.4 and $3.3 million, respectively. These DROP payables are included with "Payables – Other" in the Statement of Fiduciary Net Position.

8. Net pension Liability of the System

The components of the net pension liability as of June 30, 2019, were (in thousands):

Components of Net Pension Liability	Plan A	Plan B	Total
Total pension liability	$4,592,441	$168,017	$4,760,458
The Plan's fiduciary net position	(2,662,671)	(131,237)	(2,793,908)
The Plan's net pension liability	$1,929,770	$ 36,780	$1,966,550
The Plan's net position as a percentage of the total pension liability	57.98%	78.11%	58.69%

The components of the net pension liability as of June 30, 2018, were (in thousands):

Components of Net Pension Liability	Plan A	Plan B	Total
Total pension liability	$4,429,211	$149,684	$4,578,895
The Plan's fiduciary net position	(2,682,580)	(105,069)	(2,787,649)
The Plan's net pension liability	$1,746,631	$ 44,615	$1,791,246
The Plan's net position as a percentage of the total pension liability	60.57%	70.19%	60.88%

Notes to Financial Statements, continued

Actuarial Assumptions

The total pension liability as of June 30, 2019, was determined by an actuarial valuation as of July 1, 2018 rolled forward to June 30, 2019; and the total pension liability as of June 30, 2018 was determined by an actuarial valuation as of July 1, 2017 and rolled forward to June 30, 2018 using the actuarial assumptions set forth below. These assumptions were applied to all periods included in the measurement. For GASB No. 67 purposes, the Post Retirement Increase Fund (PRIF) assets equal to $1,795,440 for FY 2019 and FY 2018, respectively, were excluded from retiree and beneficiary liabilities but included in the Plan's fiduciary net position. (Detailed actuarial assumptions are set forth in the Actuarial Section of this report).

The last experience study dated August 27, 2018, covered the period July 1, 2011 through June 30, 2016. The experience investigation was prepared in accordance with Article 5-1-245 of the Baltimore County Code, which requires that the actuary periodically undertake an experience investigation into the mortality, service, and compensation experience of the members and retirees of the System.

Investment Rate of Return: For FY 2019 and FY 2018, the expected rate of investment return was 6.375% for each year, net of investment expense and gain sharing, and including inflation.

Mortality FY 2019: For healthy participants and beneficiaries: For males 108% of the RP-2000 Combined Healthy male table projected to 2032 by Scale AA and for females 100% of the RP-2000 Combined Healthy female table projected to 2032 by Scale AA. For disabled members, RP-2000 Disabled Annuitant Tables projected to 2032 with Scale AA.

Mortality FY2018: For healthy participants and beneficiaries: For males 108% of the RP-2000 Combined Healthy male table projected to 2027 by Scale AA and for females 100% of the RP-2000 Combined Healthy female table projected to 2027 by Scale AA. For disabled members, RP-2000 Disabled Annuitant Tables projected to 2027 with Scale AA.

Inflation for FY2019 & FY2018: 3.0% per annum

Salary Increase: Representative rates for FY2019 are as follows:

	Annual Rates of Salary Increase	
Age Band	General Employees, Correctional Officers and Deputy Sheriffs	Police Officers and Firefighters
Under 25	7.50%	10.00%
25 - 29	6.50	6.50
30 - 34	3.75	4.00
35 - 39	2.75	3.50
40 - 44	2.75	3.00
45 - 49	2.50	2.50
50 - 54	2.00	2.00
55 or Over	1.75	1.75

Salary increases are based on the 2018 experience study

Notes to Financial Statements, continued

Salary Increase: Representative rates for FY2018 are as follows:

Age	Annual Rates of Salary Increase		
	Fiscal Year 2014 – Fiscal Year 2016		Fiscal Year 2017 and thereafter
	General Employees, Correctional Officers and Deputy Sheriffs	Police Officers and Firefighters	All Members
25	6.40%	6.55%	6.55%
30	4.90	5.05	5.05
35	3.90	4.05	4.05
40	3.40	3.55	3.55
45	2.90	3.05	3.05
50	2.40	2.55	3.00
55	1.90	2.30	3.00
60	1.90	2.30	3.00
65	1.90	2.30	3.00

Marital Status for FY2019 and FY2018: For Firefighters and Police Officers, 90% of active members are assumed to be married. For all other employees, 90% of active males and 50% of active females are assumed to be married. In all cases, it is assumed that the male spouse is 3 years older than the female spouse.

Credit for Unused Sick Leave for FY2019 and FY2018: For members entitled to receive credit for unused sick leave, it was assumed that each member will accumulate such credit as follows:

Supervisory, management and confidential (SMC) members, other than firefighters	¾ year
Firefighters including SMC members	1 year
Employees other than Police Officers and Firefighters, excluding SMC members	½ year
Police Officers	½ year

Notes to Financial Statements, continued

Long-term expected rate of return. 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 for each major asset class included in the pension plan's target asset allocation as of June 30, 2019, and 2018 are summarized in the table below:

Schedule of Long-term Expected Real Rate of Return

	FY 2019		FY 2018	
Asset Class	Long-Term Expected Real Rate of Return	Target Asset Allocation	Long-Term Expected Real Rate of Return	Target Asset Allocation
Cash	0.25%	0.00%	0.00%	0.00%
Large Cap Equities	4.75	19.00	4.75	17.00
Small/Mid Cap Equities	5.00	7.00	5.00	7.00
International Equities (Unhedged)	5.00	16.00	5.00	16.00
Emerging International Equities	6.50	8.00	6.50	9.00
Core Bonds	1.62	5.00	1.00	8.00
Core Bonds – Short	0.25	5.00	NA	0.00
Bank Loans	2.75	3.00	2.75	3.00
EMD (Local Currency)	4.00	4.00	3.75	4.00
Diversified Fixed Income	1.70	9.00	2.33	9.00
Private Equity	8.40	7.00	6.75	7.00
Real Estate (Core)	3.50	5.00	3.75	5.00
Global Asset Allocation	3.47	6.00	3.44	10.00
Risk Parity	2.27	6.00	4.01	5.00

Discount rate. The discount rate used to measure the total pension liability was the funding valuation interest rate of 6.375% as of June 30, 2019 and 2018, respectively. The projection of cash flow used to determine the discount rate assumed that employer contributions will continue to follow the current funding policy. Based on those assumptions, the System's fiduciary net position was projected to make all 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, in accordance with the method prescribed by GASB Statement No. 67/68. We believe this assumption is reasonable for the purposes of the measurements required by the Statement. In the event of benefit payments not covered by the System's fiduciary net position, a municipal bond rate of 2.79% and 2.98% for FY 2019 and FY 2018, respectively, would be used to discount the benefit payments not covered by the System's fiduciary net position. The 2.79% and 2.98% rate equals the S&P Municipal Bond 20-Year High Grade Rate index at June 30, 2019 and 2018, respectively.

Notes to Financial Statements, continued

Sensitivity of the net pension liability to changes in the discount rate for FY 2019. The following schedule presents the net pension liability, calculated using the discount rate of 6.375%, as well as what the System's net liability would be if it were calculated using a discount rate that is 1 percentage point lower (5.375%) or 1 percentage point higher (7.375%) than the current rate (in thousands):

FY 2019 Net Pension Liability	1.00% Decrease (5.375%)	Current Discount Rate (6.375%)	1.00% Increase (7.375%)
Plan A - Net Pension Liability	$2,457,354	$1,929,770	$1,483,455
Plan B - Net Pension Liability	$74,076	$36,780	$8,928
Total	$2,531,430	$1,966,550	$1,492,383

Sensitivity of the net pension liability to changes in the discount rate for FY 2018. The following schedule presents the net pension liability, calculated using the discount rate of 6.375%, as well as what the System's net liability would be if it were calculated using a discount rate that is 1 percentage point lower (5.375%) or 1 percentage point higher (7.375%) than the current rate (in thousands):

FY 2018 Net Pension Liability	1.00% Decrease (5.375%)	Current Discount Rate (6.375%)	1.00% Increase (7.375%)
Plan A - Net Pension Liability	$2,263,017	$1,746,631	$1,310,931
Plan B - Net Pension Liability	$75,126	$44,615	$20,564
Total	$2,338,143	$1,791,246	$1,331,495

Required Supplementary Information (Unaudited)
Schedule of Changes in the Net Pension Liability and Related Ratios
THE SYSTEM
(*in Thousands*)

	FY 2019*	FY 2018*	FY 2017*	FY 2016*	FY 2015*	FY 2014*
Total pension liability						
Service cost	$ 95,077	$ 110,061	$ 103,827	$ 94,108	$ 88,642	$ 60,588
Interest	288,687	276,797	257,478	262,189	258,266	251,154
Changes of benefit terms	3,981	-	-	-	-	-
Differences between expected and actual experience	63,801	105,206	43,948	(52,809)	71,738	-
Changes of assumptions	21,120	-	173,216	106,774	21,165	-
Benefit payments, including refunds of member contributions	(291,103)	(285,630)	(277,787)	(253,159)	(247,854)	(228,834)
Net change in total pension liability	181,563	206,434	300,682	157,103	191,957	82,908
Beginning total pension liability	4,578,895	4,372,461	4,071,779	3,914,676	3,722,719	3,639,811
Ending total pension liability: (a)	4,760,458	4,578,895	4,372,461	4,071,779	3,914,676	3,722,719
Plan fiduciary net position						
Employer contributions	138,200	128,896	118,155	105,742	108,191	80,453
Employee contributions	48,198	45,697	43,244	40,812	39,725	37,845
Net investment income	112,089	212,476	330,746	(26,404)	23,026	327,264
Benefit payments, including refunds of member contributions	(291,103)	(285,630)	(277,787)	(253,159)	(247,854)	(228,834)
Administrative expense	(1,125)	(1,272)	(2,393)	(1,647)	(1,681)	(1,342)
Other	-	-	150,000	-	-	-
Net change in plan fiduciary net position	6,259	100,167	361,965	(134,656)	(78,593)	215,386
Beginning plan fiduciary net position	2,787,649	2,687,482	2,325,517	2,460,173	2,538,766	2,323,380
Ending plan fiduciary net position: (b)	2,793,908	2,787,649	2,687,482	2,325,517	2,460,173	2,538,766
Plan's net pension liability - ending (a) - (b)	$ 1,966,550	$ 1,791,246	$ 1,684,979	$ 1,746,262	$ 1,454,503	$1,183,953
Plan fiduciary net position as a percentage of the total pension liability	58.69%	60.88%	61.46%	57.11%	62.84%	68.20%
Covered payroll	$ 588,645	$ 572,829	$ 569,281	$ 540,702	$ 519,380	$ 509,899
System's net pension liability as a percentage of covered payroll	334.08%	312.70%	295.98%	322.96%	280.05%	232.19%
Expected average remaining service years of all participants	6	6	6	6	6	6

*Ten-year historical trend information is not available but will be compiled going forward.

Notes to the Schedule: Benefit changes: Benefits were increased for a special 2% COLA for annuitants who had annual annuities under $22,000.
Changes of Assumptions: Assumptions were changed as a result of the 2011-2016 Experience Study dated August 27, 2018.
See that report and the latest funding valuation for the full set of assumptions.

Required Supplementary Information (Unaudited)
Schedule of Changes in the Net Pension Liability and Related Ratios
PLAN A
(in Thousands)

	FY 2019*	FY 2018*	FY 2017*	FY 2016*	FY 2015*	FY 2014*
Total pension liability						
Service cost	$ 70,490	$ 81,996	$ 80,892	$ 76,121	$ 74,949	$ 51,438
Interest	277,756	267,900	250,988	257,134	253,796	247,768
Changes of benefit terms	3,981	-	-	-	-	-
Differences between expected and actual experience	66,329	102,264	43,910	(51,504)	80,967	-
Changes of assumptions	30,176	-	166,954	103,817	21,165	-
Benefit payments, including refunds of member contributi	(285,502)	(282,243)	(274,978)	(250,515)	(246,074)	(227,438)
Net change in total pension liability	163,230	169,917	267,766	135,053	184,803	71,768
Beginning total pension liability	4,429,211	4,259,294	3,991,528	3,856,475	3,671,672	3,599,904
Ending total pension liability: (a)	$4,592,441	$4,429,211	$4,259,294	$3,991,528	$3,856,475	$3,671,672
Plan fiduciary net position						
Employer contributions	$ 131,510	$ 123,028	$ 115,276	$ 104,306	$ 106,912	$ 80,127
Employee contributions	28,564	28,504	28,445	28,491	29,463	29,860
Net investment income	106,590	206,107	321,774	(25,912)	22,648	323,620
Benefit payments, including refunds of member contributi	(285,502)	(282,243)	(274,978)	(250,515)	(246,074)	(227,438)
Administrative expense	(1,071)	(1,223)	(2,350)	(1,608)	(1,651)	(1,326)
Other	-	-	150,000	-	-	-
Net change in plan fiduciary net position	(19,909)	74,173	338,167	(145,238)	(88,702)	204,843
Beginning plan fiduciary net position	2,682,580	2,608,407	2,270,240	2,415,478	2,504,180	2,299,337
Ending plan fiduciary net position: (b)	2,662,671	2,682,580	2,608,407	2,270,240	2,415,478	2,504,180
Plan's net pension liability - ending (a) - (b)	$1,929,770	$1,746,631	$1,650,887	$1,721,288	$1,440,997	$1,167,492
Plan fiduciary net position as a percentage of the total pension liability	57.98%	60.57%	61.24%	56.88%	62.63%	68.20%
Covered payroll	$ 343,268	$ 356,014	$ 380,007	$ 382,891	$ 390,353	$ 403,401
System's net pension liability as a percentage of covered payroll	562.18%	490.61%	434.44%	449.55%	369.15%	289.41%
Expected average remaining service years of all participants	3	3	4	4	4	4

*Ten-year historical trend information is not available but will be compiled going forward.

Notes to the Schedule: Benefit changes: Benefits were increased for a special 2% COLA for annuitants who had annual annuities under $22,000.
Changes of Assumptions: Assumptions were changed as a result of the 2011-2016 Experience Study dated August 27, 2018.
See that report and the latest funding valuation for the full set of assumptions.

Required Supplementary Information, continued (Unaudited)
Schedule of Changes in the Net Pension Liability and Related Ratios
PLAN B

(*in Thousands*)

	FY 2019*	FY 2018*	FY 2017*	FY 2016*	FY 2015*	FY 2014*
Total pension liability						
Service cost	$ 24,587	$ 28,065	$ 22,935	$ 17,987	$ 13,693	$ 9,150
Interest	10,931	8,897	6,490	5,055	4,470	3,386
Changes of benefit terms	-	-	-	-	-	-
Differences between expected and actual experience	(2,528)	2,942	38	(1,305)	(9,229)	-
Changes of assumptions	(9,056)	-	6,262	2,957	-	-
Benefit payments, including refunds of member contributions	(5,601)	(3,387)	(2,809)	(2,644)	(1,780)	(1,396)
Net change in total pension liability	18,333	36,517	32,916	22,050	7,154	11,140
Beginning total pension liability	149,684	113,167	80,251	58,201	51,047	39,907
Ending total pension liability: (a)	$ 168,017	$ 149,684	$ 113,167	$ 80,251	$ 58,201	$ 51,047
Plan fiduciary net position						
Employer contributions	$ 6,690	$ 5,868	$ 2,879	$ 1,436	$ 1,279	$ 326
Employee contributions	19,634	17,193	14,799	12,321	10,262	7,985
Net investment income	5,499	6,369	8,972	(492)	379	3,644
Benefit payments, including refunds of member contributions	(5,601)	(3,387)	(2,809)	(2,644)	(1,780)	(1,396)
Administrative expense	(54)	(49)	(43)	(39)	(31)	(16)
Other	-	-	-	-	-	-
Net change in plan fiduciary net position	26,168	25,994	23,798	10,582	10,109	10,543
Beginning plan fiduciary net position	105,069	79,075	55,277	44,695	34,586	24,043
Ending plan fiduciary net position: (b)	131,237	105,069	79,075	55,277	44,695	34,586
Plan's net pension liability - ending (a) - (b)	$ 36,780	$ 44,615	$ 34,092	$ 24,974	$ 13,506	$ 16,461
Plan fiduciary net position as a percentage of the total pension liability	78.11%	70.19%	69.87%	68.88%	76.79%	67.75%
Covered payroll	$ 245,377	$ 216,815	$ 189,274	$ 157,811	$ 129,027	$ 106,498
System's net pension liability as a percentage of covered payroll	14.99%	20.58%	18.01%	15.83%	10.47%	15.46%
Expected average remaining service years of all participants	12	12	12	13	13	13

*Ten-year historical trend information is not available but will be compiled going forward.

Notes to the Schedule: Benefit changes: Benefits were increased for a special 2% COLA for annuitants who had annual annuities under $22,000.
Changes of Assumptions: Assumptions were changed as a result of the 2011-2016 Experience Study dated August 27, 2018.
See that report and the latest funding valuation for the full set of assumptions.

Required Supplementary Information, continued
(Unaudited)

Schedule of Investment Returns

Schedule of Investment Returns	Fiscal Year*	Rate
Annual money-weighted rate of return, net of investment expenses	2019	3.60%
Annual money-weighted rate of return, net of investment expenses	2018	8.10
Annual money-weighted rate of return, net of investment expenses	2017	13.58
Annual money-weighted rate of return, net of investment expenses	2016	-1.14
Annual money-weighted rate of return, net of investment expenses	2015	0.78
Annual money-weighted rate of return, net of investment expenses	2014	14.01

*Ten year information is not available at this time, but will be compiled going forward.

Schedule of Employer Contributions
Last 10 Fiscal Years
(*in thousands*)

THE SYSTEM	FY 2019	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014	FY 2013	FY 2012	FY 2011	FY 2010
Actuarially Determined Employer Contribution	$138,200	$128,896	$118,155	$110,561	$103,372	$80,453	$73,362	$65,127	$58,340	$57,976
Contributions in relation to the Actuarially Determined Employer Contribution	138,200	128,896	118,155	105,742	108,191	80,453	73,362	65,127	58,340	57,976
Contribution Deficiency (Excess)	$ -	$ -	$ -	$ 4,819	$ (4,819)	$ -	$ -	$ -	$ -	$ -
Covered Payroll	$588,645	$572,829	$569,281	$540,702	$519,380	$509,899	$532,406	$544,230	$536,394	$529,269
Contributions as a percentage of Covered Payroll	23.48%	22.50%	20.75%	19.56%	19.90%	15.78%	13.78%	11.97%	10.88%	10.95%

Required Supplementary Information, continued
(Unaudited)

Schedule of Employer Contributions
Last 10 Fiscal Years
(in thousands)

PLAN A*	FY 2019	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Actuarially Determined Employer Contribution	$131,510	$123,028	$115,276	$109,125	$102,093	$80,127
Contributions in relation to the Actuarially Determined Employer Contribution	131,510	123,028	115,276	104,306	106,912	80,127
Contribution Deficiency (Excess)	$ -	$ -	$ -	$ 4,819	$ (4,819)	$ -
Covered Payroll	$343,268	$356,014	$380,007	$382,891	$390,353	$403,401
Contributions as a percentage of Covered Payroll	38.31%	34.56%	30.34%	27.24%	26.15%	19.86%

*Ten-year historical trend information is not available but will be compiled going forward.

Schedule of Employer Contributions
Last 10 Fiscal Years
(in thousands)

PLAN B*	FY 2019	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014
Actuarially Determined Employer Contribution	$6,690	$5,868	$2,879	$1,436	$1,279	$326
Contributions in relation to the Actuarially Determined Employer Contribution	6,690	5,868	2,879	1,436	1,279	326
Contribution Deficiency (Excess)	$ -	$ -	$ -	$ -	$ -	$ -
Covered Payroll	$245,377	$216,815	$189,274	$157,811	$129,027	$106,498
Contributions as a percentage of Covered Payroll	2.73%	2.71%	1.52%	0.91%	0.99%	0.31%

*Ten-year historical trend information is not available but will be compiled going forward.

Notes to the Required Supplementary Information
(Unaudited)

The actuarial method and assumptions used in the calculations of the actuarially determined employer contributions (ADEC) are calculated as of January 1, six months prior to the end of the fiscal year in which contributions are reported (i.e., the contribution determined by the valuation completed as of January 1, 2018 was contributed in the fiscal year ending June 30, 2019). Additional information as of the latest actuarial valuation follows:

Valuation Date:	January 1, 2019
Actuarial cost Method:	Projected Unit Credit (Entry Age Normal used for GASB 68*)
Normal Cost Allocation:	Service
Amortization Method:	Level percentage of Payroll
Remaining Amortization Period:	27-Year layered amortization
Asset Valuation Method	10- year smoothed fair value without corridor
Actuarial Assumptions:	
-Investment Rate of Return(1)	6.375%
-Projected Salary Increases	1.75% - 10.00% for Police and Fire 1.75% - 7.50% for all other employees
-Cost-of-Living Adjustments(2)	None
-Healthy Mortality (Male)	108% of RP-2000 Healthy Annuitant Male Table projected to 2032 with Scale AA
-Healthy Mortality (Female)	RP-2000 Healthy Annuitant Female Table projected to 2032 with Scale AA
-Disabled Mortality	RP-2000 Disabled Annuitant Tables projected to 2032 with Scale AA

(1) Includes inflation at 3.0% and net of gain sharing.
(2) Increases equal to the CPI up to a maximum of 3% are granted to qualifying members only if only if sufficient reserves have accumulated in the Post Retirement Increase Fund.

*The Actuarial Cost Method used for the GASB 68 reporting is Entry Age Normal.

Beginning with the January 1, 2018 actuarial valuation, actuarially determined contribution amounts are calculated as of the beginning of the calendar year (January 1) for the fiscal year ending in the following calendar year. Prior to the January 1, 2018 valuation, actuarially determined contribution amounts were calculated as of the beginning of the fiscal year (July 1) for the year immediately following the fiscal year. Actuarial valuations are performed every year.

Supplementary Supporting Schedules

Schedule of Investment Expenses
For the Years Ended June 30, 2019 and 2018
(*in Thousands*)

	FY 2019	FY 2018
Investment managers:		
Domestic equity managers	$ 3,284	$ 4,082
International equity managers	3,313	3,489
Fixed income managers	3,382	3,317
Private equity managers	5,518	5,434
Real estate managers	1,740	1,630
Hedge fund managers	0	0
Global asset allocation managers	2,583	2,842
Total manager fees	19,820	20,794
Investment service fees:		
Custodian fees	304	298
Consultant fees	314	309
Total service fees	618	607
Total investment fees and expenses	$ 20,438	$ 21,401

Schedule of Administrative Expenses
For the Years Ended June 30, 2019 and 2018
(*in Thousands*)

	FY 2019	FY 2018
Personal services:		
Salaries	$ 583	$ 594
Employee fringe benefits	229	238
Total personal services	812	832
Professional and contractual services:		
Contractual Services	-	-
Actuarial	172	256
Legal and financial	25	58
Data processing	3	21
Medical	38	43
Total Professional and Contractual services	238	378
Miscellaneous services:		
Communication	58	54
Equipment and supplies	17	8
Total miscellaneous services:	75	62
Total administrative expenses	$ 1,125	$ 1,272

INVESTMENT SECTION

INVESTMENT CONSULTANT'S REPORT

Introduction

This report, prepared for the Employees' Retirement System of Baltimore County (the "System") by NEPC, LLC, is based on accounting information supplied by the System's custodian, BNY Mellon. NEPC relies on this source for security pricing, calculation of accruals, and all transactions. NEPC reconciles the monthly rates of return provided by BNY Mellon with those calculated by each investment manager. NEPC exercises reasonable professional care in preparing the performance report and the performance calculations are reported to the greatest degree possible in compliance with the presentation standards of the Global Investment Performance Standards (GIPS) promulgated by the CFA Institute. The returns, calculated using a time-weighted rate of return methodology based upon fair values, are reported on both net of fees and gross of fees to provide comparisons with the appropriate benchmarks.

Distinction of Responsibilities

The Board of Trustees (the "Trustees") of the System is responsible for establishing the investment goals and objectives for the System's Retirement Fund (the "Fund") and sets the appropriate risk levels and asset allocation policy. The criteria used in developing the System's investment policy include: actuarial information, such as funded status, the actuarial return assumption and benefits obligations; risk and return expectations of the capital markets; the financial conditions of the County; and practices of similar types of funds. The investment policy has been developed after the Trustees have given careful consideration of the potential financial implication of a wide range of investment policies. The policy describes the degree of pension fund risk that the Trustees, as System fiduciaries, deem appropriate.

In carrying out their duties the Trustees follow acceptable standards of prudence. These standards include: 1) acting for the exclusive benefit of the Fund participants and beneficiaries; 2) exercising skill, care and diligence of a prudent person acting in a similar capacity; and 3) diversifying investments to minimize the risk of large losses.

The investment managers required to execute the policy will invest System assets in accordance with the established policy and with their judgments concerning relative investment values. In particular, the investment managers are accorded full discretion to select individual securities, make periodic strategic adjustments and diversify their portfolios.

Investment Policy/Structure

The System's investment policy was designed to provide broad diversification among asset classes in order to maximize return at an appropriate level of risk and minimize the risk of large losses to the System. In addition, asset allocation ranges have also been implemented to maintain compliance with the investment policy and ensure the System will achieve its long-term risk and return objectives.

The System's investment policy is shown below for the broad investment categories:

Investment Policy as of June 30, 2019

Asset Class	***Allocation Target***	***Allocation Range***
U. S. Equities	*26%*	*20 - 30%*
International Equities	*24%*	*20 - 30%*
Private Equities	*7%*	*0 - 9%*
Fixed Income	*26%*	*20 - 30%*
Real Estate	*5%*	*0 - 7%*
Global Asset Allocation	*12%*	*7 - 17%*
Cash and Cash equivalents	*0%*	*0 - 5%*
Total	***100%***	

INVESTMENT CONSULTANT'S REPORT, continued

Within each asset class, the Trustees have employed several investment managers to further diversify the investment approach and minimize style bias. The Trustees have employed both active and passive investment strategies in order to obtain the desired asset allocation mix in the most cost effective and efficient manner.

Investment Objective

The System's long-term investment objective is to achieve a total rate of return which exceeds the Policy Index, defined here as the asset allocation target for each asset class invested in its respective index. The Trustees recognize that there will be short-term deviations from these long-term investment objectives, and therefore, have developed performance expectations for the Fund and individual investment managers. The overall Fund is also compared to the Investment Metrics Public Funds Universe with more than $1.0 trillion in assets, a large and representative universe of actual institutional performance results in the industry.

Market Overview

The U.S. economy continued its historically long growth streak over the fiscal year that ended June 30, 2019 ("FY 2019"), providing an accommodative backdrop for capital markets. Mid-way through the year, the Federal Reserve ("The Fed") reversed course and adopted a more dovish stance, signaling the potential to cut rates in the near future. The Fed mirrored most other central banks whose accommodative policies are expected to persist in 2019 and, perhaps, beyond. As a result, risk assets pushed higher across the board. Domestic stocks, as measured by the S&P 500 Index, capped off the fiscal year on a record high. U.S. equities outperformed their international counterparts by 9.3%, with the S&P 500 and MSCI EAFE (net) indexes returning 10.4% and 1.1%, respectively. Developed international equity markets were in the black despite a strengthening U.S. dollar and concerns around U.S. trade policy. In particular, emerging market equities underperformed the U.S. but modestly outpaced developed international equities. The dovish pivot by the Fed also bolstered fixed-income returns, broadly causing yields to decline. In the U.S., high-quality fixed income, as measured by the Bloomberg Barclays U.S. Aggregate Bond Index, returned 7.9%. Credit spreads also narrowed amid a sustained appetite for risk, resulting in the Barclays U.S. High Yield Index returning 7.5% for the fiscal year ending June 30.

U.S. Equity Markets

Volatility spiked at the end of calendar year 2018, driving U.S. stocks sharply lower in the fourth quarter. The sell-off was largely due to slowing economic growth, heightened trade tensions between the United States and China, and expectations of additional rate hikes by the Fed. U.S. equities quickly recovered in the beginning of 2019 as the Fed assumed a more dovish tone, restoring confidence and providing a powerful tailwind to investor sentiment. For the fiscal year, all U.S. large-cap index returns were in the black across the style spectrum (core, growth and value). However, small-cap stocks lagged, posting losses for FY 2019 with the Russell 2000 Growth and Value indexes down 0.5% and 6.2%, respectively. Additionally, growth stocks continued to outperform their value counterparts across both large- and small-cap stocks.

Non-U.S. Equities

Despite headwinds, international developed markets were up 1.1%, according to the MSCI EAFE (net) Index, underperforming domestic equities by a margin of 9.3%. Underperformance in international developed markets was driven largely by uncertainties around economic growth and trade disputes. Emerging market equities experienced a similar trajectory due to negative sentiment associated with trade tensions between the United States and China; weakness in the yuan also weighed on Chinese equities. While emerging markets equities lagged the United States, they proved to be resilient. The MSCI EM Index was down 14.6% in the calendar year 2018 but rebounded significantly in 2019, bringing the fiscal year return to 1.2%.

Fixed Income Markets

The Treasury yield curve continued to flatten over the fiscal year as two additional Fed rate hikes in 2018 pushed short-term interest rates higher. Despite the rate hikes, yields fell in 2019 in response to the Fed's dovish pivot. Lower

INVESTMENT CONSULTANT'S REPORT, continued

interest rates boosted returns for US high-quality fixed income, with the Bloomberg Barclays U.S. Aggregate Bond Index returning 7.9%. The Fed signaled no additional rate increases in the 2019 calendar year, reflecting its concerns over pushing the U.S. economy into a recession with an overly restrictive monetary policy. Outside of the United States, emerging market debt faced a challenging 2018 with the JPM GBI-EM Global Diversified Index losing 6.2% for the calendar year. However, emerging market debt recouped its losses due to a sharp reversal in sentiment around expectations of a comprehensive trade agreement with China and further government stimulus within emerging markets. As a result, the JPM GBI-EM Global Diversified Index gained 9.0% for the fiscal year.

Real Estate and Alternative Investments

The real estate market maintained its winning streak in fiscal year 2019. The NCREIF ODCE Index, representing 36 open-end commingled funds pursuing a core investment strategy, generated a 6.6% return in the fiscal year.

Alternative investments, excluding commodities, posted positive returns for the fiscal year. Private equity investments led the way, outperforming real estate, private debt and absolute-return investments. Commodities were in the red in fiscal year 2019, down 6.8%, according to the Bloomberg Commodity Index; losses were fueled by ongoing concerns about the global outlook and the impact tariffs could have on demand for oil.

Investment Performance

For the fiscal year ended June 30, 2019, the System's investment portfolio returned 3.9% (time-weighted, net of fees), including dividends and interest income, unrealized gains and losses.

The System's domestic equity portfolio posted a 6.7% net of fee return over the fiscal year as compared to an 8.8% return of the broad U.S. equity market, as measured by the Wilshire 5000 Index. The System's non-US equity portfolio's net of fee return was -1.3%, compared to 1.3% for the international equity benchmark (MSCI ACWI ex-US). The System's domestic fixed income portfolio net of fee return was 6.6%, compared to 7.9% for the broader domestic fixed income benchmark (Bloomberg Barclays U.S. Aggregate). The System's global asset allocation managers trailed their respective benchmarks during the fiscal year.

To gauge how the overall fund did relative to other public funds, the System's gross of fee return for the fiscal year was compared to the median public fund in the Investment Metrics Universe of Public Funds.

The System's gross of fee time-weighted return of 4.4% ranked in the 88th percentile of the Universe for the fiscal year. The fair value of the System increased from \$2.788 billion on June 30, 2018 to \$2.794 billion on June 30, 2019.

INVESTMENT CONSULTANT'S REPORT, continued

The time-weighted net returns for various asset classes earned during the fiscal year ending June 30, 2019 are shown in the following table.

			Fiscal Year Rate of Return	
	Fair Value (in Millions)	**Percent of Total**	**System**	**Benchmark**
U S Equities	$ 696.4	24.9%	6.7%	8.8%
International Equities	452.9	16.2	(3.6)%	1.1%
Emerging Market Equity	217.4	7.8	3.0%	1.2%
Private Equity	168.9	6.0	5.4%	14.5%
Real Estate	150.3	5.4	3.9%	6.5%
Fixed Income	576.0	20.5	6.6%	8.1%
Emerging Market Debt	114.9	4.1	6.9%	9.0%
GAA	420.3	15.0	3.3%	7.2%
Hedge Funds	0.1	0.0	N/A	0.0%
Cash	3.9	0.1	2.3%	2.3%
Total Fund*	$2,801.1	100.0%	3.9%	6.8%

*The Total Fund shown above in the amount of $2,801.1 million includes short-term investments of $36.5 million, accrued interest and dividends receivable of $3.3 million, receivables for investment sold of $4.6 million and payables for investment purchased of $23.5 million. These items are separately reported from "Total Investments" in the Statement of Fiduciary Net Position.

Investment Strategies

During FY 2019, the Trustees conducted an annual asset allocation review. As a result of the review, the Board increased their target to U.S. equites from 24% to 26%, increased fixed income from 24% to 26%, decreased international equites from 25% to 24%, and decreased global asset allocation (GAA) from 15% to 12%.

New managers include one in domestic equity, three in international equity, and two in private equity. Terminated managers include one from domestic equity, and one from global asset allocation. The Board implemented these changes to better meet the System's long-term risk and return objectives.

Keith Stronkowsky, CFA

Senior Consultant

Outline of Investment Policies

Investment Policy. As provided in Article 5 Title 1 of the Baltimore County Code, the Board of Trustees of the Employees' Retirement System of Baltimore County (the "Board") is empowered to invest the System's assets and to take appropriate action regarding the investment, management and custodianship of plan assets. The investment responsibilities include establishing reasonable investment objectives, developing investment policy guidelines, selecting investment managers and evaluating performance results to assure adherence to guidelines and the achievement of objectives.

The Board has carefully exercised these responsibilities by diversifying the assets into common stocks (domestic and foreign), fixed income, real estate, and private equity. The investment policy targets are 26% in U.S. equities, 26% in fixed income investments, 24% in international equities, 12% in global asset allocation, 7% in private equity and 5% in real estate. The investment policy authorizes the allocation targets to be maintained within the allocation ranges specified in the Investment Consultant's report.

A pension investment consultant has been appointed to advise and consult with the Board and the System staff, prepare recommendations on investment policies, investment management structure and asset allocation, and to monitor and evaluate the performance of the investment managers and the asset custodian.

The Board authorizes the managers to vote all proxies related to stocks in which they invest pension assets. The Board expects the managers to cast votes solely in the best interest of plan beneficiaries. Managers are required to report annually to the Board on its proxy-voting policies and activities on the System's behalf.

Investment Results

The following schedule compares rates of return, gross of fees, for the System portfolio with a comparative index, market indices and the inflation rate.

The market indices shown below are the Wilshire 5000 Stock Index, Morgan Stanley Capital International All Country World Ex-U.S. Index, the Barclays Capital Universal Index, 60% MSCI World/40% WGBI blended index, the NCREIF Property Index, and the Cambridge Associates Private Equity Index. The Comparative Index is a blend of market indices and is reflective of the total System's portfolio policy for each time period.

From July 1, 2014 to January 31, 2015, the Balanced Index has been comprised of 15% S&P 500; 7% Russell 2000 Index; 10% Morgan Stanley EAFE Index; 7% Morgan Stanley Emerging Markets Free Index; 9% Morgan Stanley World Index; 14.3% Barclays Capital Aggregate Bond Index; 6% Citigroup World Government Bond Index; 3.4% Merrill Lynch High Yield Index; 1% Barclays Corporate Credit Index +1.5%; 4% NCREIF Index; 5% Thompson One All Private Equity Index; 6% HFRI Fund of Funds Index; 5% Bloomberg Commodity Index; and 7.3% JP Morgan Emerging Market Global Bond Index.

From February 1, 2015 to June 30, 2017, the Balanced Index has been comprised of 19% S&P 500; 8% Russell 2000 Index; 13% Morgan Stanley EAFE Index; 9% Morgan Stanley Emerging Markets Free Index; 8% Morgan Stanley World Index; 14% Barclays Capital Aggregate Bond Index; 6% Citigroup World Government Bond Index; 3% Merrill Lynch High Yield Index; 1% Barclays Corporate Credit Index +1.5%; 5% NCREIF Property Index; 7% Thomson One All Private Equity Index; 7% JP Morgan Emerging Market Global Bond Index.

Outline of Investment Policies, continued

From July 1, 2017 to March 31, 2019, the Balanced Index has been comprised of 17% S&P 500; 7% Russell 2000 Index; 16% Morgan Stanley EAFE Index; 9% Morgan Stanley Emerging Markets Free Index; 5% Bloomberg Barclays Capital Aggregate Bond Index, 3% Bank of America Merrill Lynch 1-3 years US Corporate & Government Index, 6% Diversified Fixed Income (1/3rd each to Bloomberg Barclays Capital Global Aggregate Bond Index ex-EM, JP Morgan EMBI Global Bond Index, Merrill Lynch Global High Yield BB-B Developed Markets), 3% to 3-month LIBOR +3%, 3% S&P LSTA Leveraged BB Loan Index, 4% JP Morgan GBI-EM Diversified Index, 15% to blended benchmark (60% MSCI World Index, 40% Citigroup World Government Bond Index), 5% NCREIF Property Index, 7% Cambridge Associates Private Equity Index.

As of April 2019, the Balanced Index has been comprised of 19% S&P 500; 7% Russell 2000 Index; 16% MSCI EAFE Index; 5% MSCI EM Index; 3% MSCI EM Small Cap Index; 5% Bloomberg Barclays Capital Aggregate Bond Index, 5% Bank of America Merrill Lynch 1-3 years US Corporate & Government Index, 6% Diversified Fixed Income (1/3rd each to Bloomberg Barclays Capital Global Aggregate Bond Index ex-EM, JP Morgan EMBI Global Bond Index, Merrill Lynch Global High Yield BB-B Developed Markets), 3% to 3-month LIBOR +3%, 3% S&P LSTA Leveraged BB Loan Index, 4% JP Morgan GBI-EM Diversified Index, 12% to blended benchmark (60% MSCI World Index, 40% Citigroup World Government Bond Index), 5% NCREIF Property Index, 7% Cambridge Associates Private Equity Index.

Outline of Investment Policies, continued

The rate of return measure for the financial asset class managers is time weighted. This investment measure eliminates the influence of contributions and withdrawals that are beyond the control of the investment managers. This investment measure is an effective means of appraising a fund manager's ability to make assets perform.

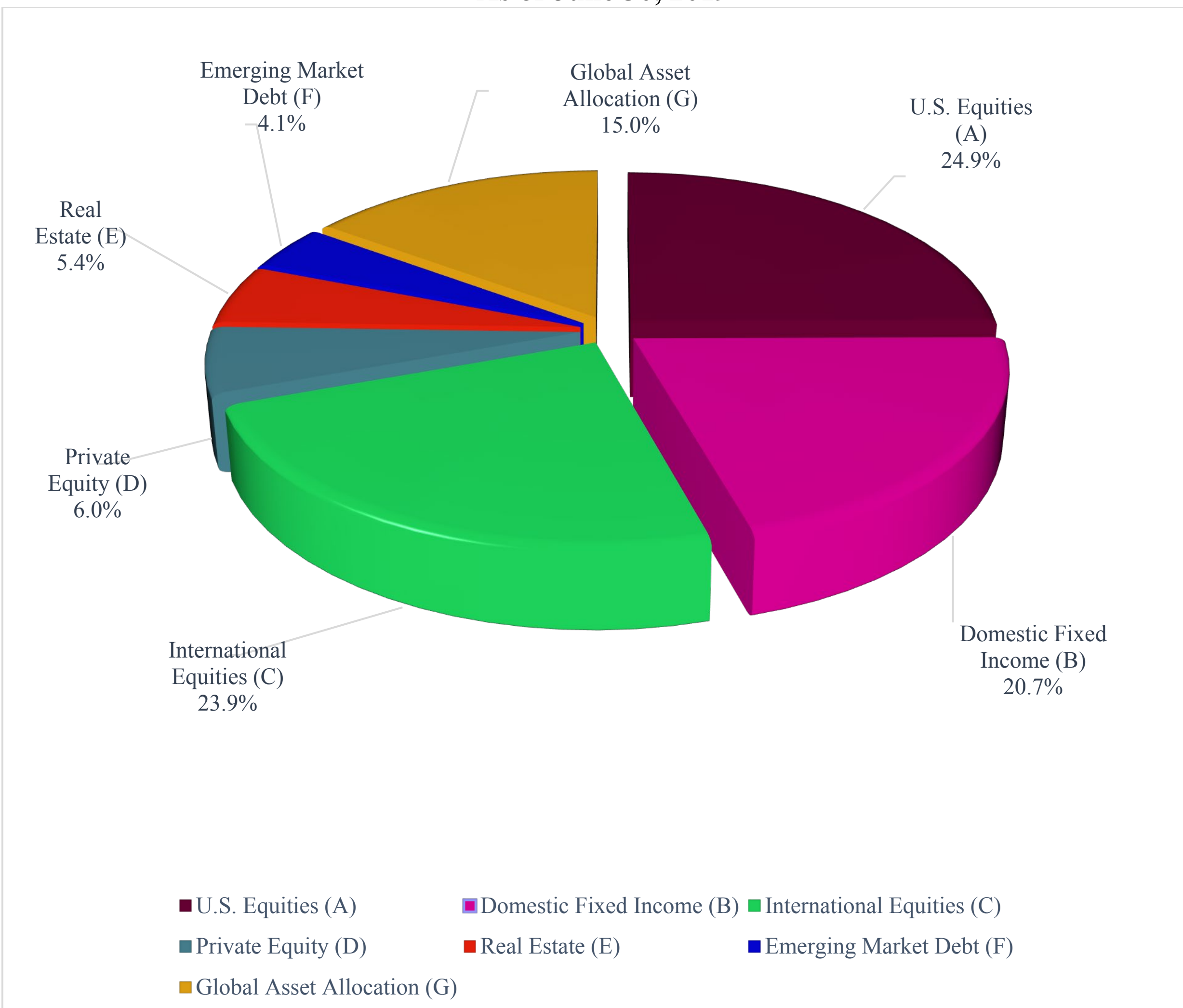
Investment Return Summary
(Percentage Change)

Rate of Return	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Annualized Rate Over 3 Years	Annualized Rate Over 5 Years
U.S. Common Stock	8.1%	1.3%	21.6%	18.1%	7.2%	15.5%	11.0%
Wilshire 5000 Stock Index	7.5	1.7	18.7	14.9	8.8	14.0	10.0
International Common Stock	(5.5)	(8.6)	21.1	5.1	(0.8)	8.1	2.1
MSCI ACWIXUS	(5.3)	(10.2)	20.5	7.3	1.3	9.4	2.2
GAA	4.5	(1.1)	9.1	6.1	3.7	6.3	4.4
60% MSCI World / 40% WGBI	2.1	1.7	10.0	7.4	7.2	8.2	5.6
Domestic Fixed Income	1.6	5.6	5.0	2.3	7.1	4.8	4.3
Barclays Universal	1.6	5.8	0.9	(0.3)	8.1	2.8	3.2
Emerging Market Debt	(16.2)	0.9	7.2	(3.8)	7.7	3.6	(1.3)
JP Morgan GBI – EM Diversified	(15.4)	2.0	6.4	(2.3)	9.0	4.2	(0.5)
Real Estate	15.8	12.7	7.4	9.2	4.8	7.2	10.0
NCREIF Property Index	13.0	10.6	7.0	7.2	6.5	6.9	8.8
Private Equity	10.4	2.4	9.5	13.5	5.4	12.1	10.4
Cambridge Assoc. Private Equity Index	10.6	3.2	17.8	16.2	14.5	16.0	12.2
Hedge Fund of Funds*	0.2	N/A	N/A	N/A	N/A	N/A	N/A
HFRI Hedge Fund-of-Funds Index	4.0	N/A	N/A	N/A	N/A	N/A	N/A
Real assets*	(22.1)	N/A	N/A	N/A	N/A	N/A	N/A
Bloomberg Commodity Index	(23.7)	N/A	N/A	N/A	N/A	N/A	N/A
Total System Portfolio	1.3	(0.3)	14.1	8.2	4.4	9.0	5.6
Comparative Index (Policy Index)	0.8	(0.3)	14.0	8.3	6.8	9.6	5.8
Inflation Rate (CPI)	0.1	1.0	1.6	2.9	1.7	2.1	1.5

Note: Performance is gross of fees.

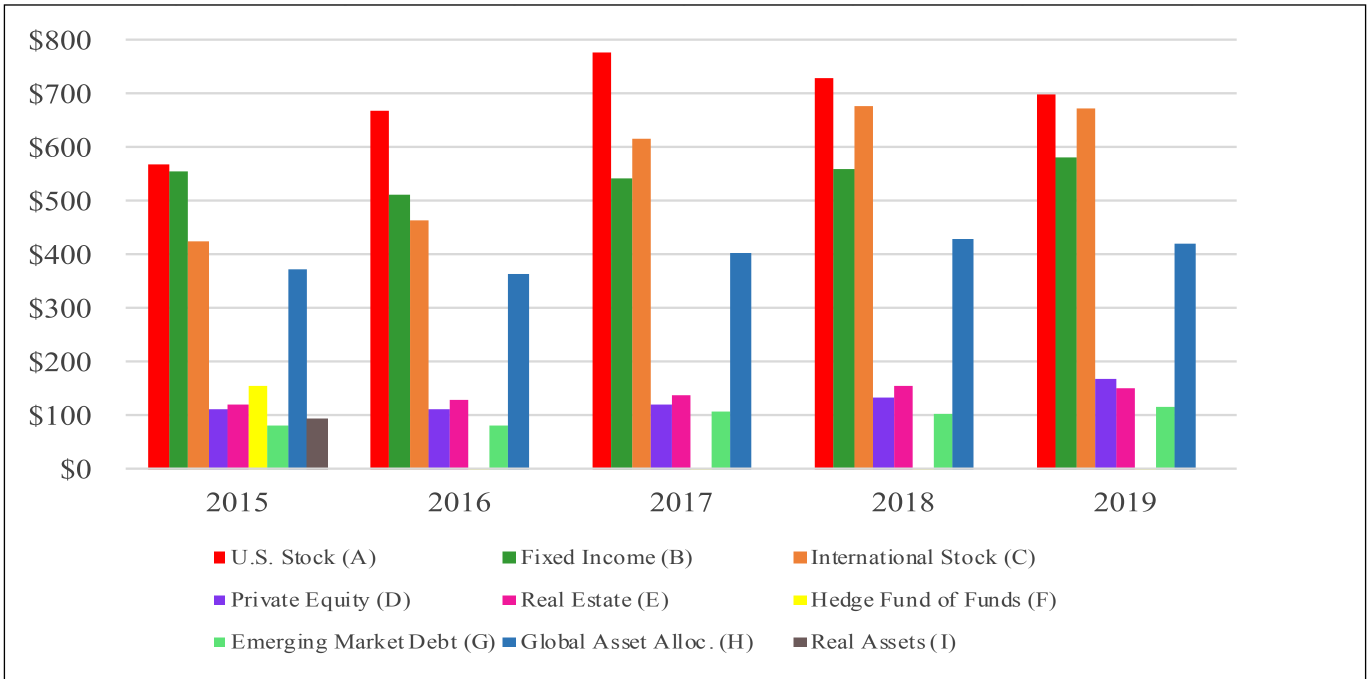
*During FY 2016, the Board phased-out Hedge Fund-of-Funds and eliminated Real Assets.

Portfolio Composition by Manager Type
Fair Value of Investments
Percent of Total Fund
As of June 30, 2019



Portfolio Composition by Manager Type

Fair Value of Investments
Percent of Total Fund
As of June 30, 2015, 2016, 2017, 2018 & 2019
(Expressed in Millions)



Investment Type	2015		2016		2017		2018		2019	
U.S. Stock (A)	$ 567.6	22.9%	$ 669.8	28.7%	$ 774.8	28.7%	$ 728.7	26.2%	$ 696.4	24.9%
Fixed Income (B)	557.2	22.4	512.7	22.0	544.0	20.1	561.3	20.1	579.9	20.7
International Stock (C)	423.6	17.1	462.9	19.8	616.9	22.8	675.0	24.2	670.3	23.9
Private Equity (D)	111.6	4.5	112.9	4.8	119.3	4.4	134.1	4.8	168.9	6.0
Real Estate (E)	118.4	4.8	130.4	5.6	139.7	5.2	153.9	5.5	150.3	5.4
Hedge Fund of Funds (F)	154.5	6.2	3.0	0.1	0.7	0.0	0.2	0.0	0.1	0.0
Emerging Market Debt (G)	79.4	3.2	79.2	3.4	107.7	4.0	104.7	3.8	114.9	4.1
Global Asset Alloc. (H)	373.2	15.1	365.1	15.6	400.8	14.8	429.5	15.4	420.3	15.0
Real Assets (I)	94.6	3.8	-	0.0	-	0.0	-	0.0	-	0.0
Total	$2,480.1	100.0%	$2,336.0	100.0%	$2,703.9	100.0%	$2,787.4	100.0%	*$2,801.1	100.0%

*The Total Fund shown above in the amount of $2,801.1 million includes short-term investments of $36.5 million, accrued interest and dividends receivable of $3.3 million, receivables for investment sold of $4.6 million and payables for investment purchased of $23.5 million. These items are separately reported from "Total Investments" in the Statement of Fiduciary Net Position.

List of Largest Assets Held*

(Year Ended June 30, 2019)

	Ten Largest Equity Holdings (STOCKS)	PAR VALUE/ SHARES	FAIR VALUE
1)	AIA Group Ltd	436,959	$4,712,170
2)	PROS Holdings, Inc.	60,689	3,839,199
3)	VISA, Inc.	21,869	3,795,328
4)	ING GROEP NV	323,727	3,758,865
5)	VEEVA Systems, Inc.	23,136	3,750,554
6)	PAYCOM Software, Inc.	16,504	3,741,704
7)	DBS Group Holdings Ltd	193,500	3,712,825
8)	COGNEX Corp.	77,358	3,711,659
9)	FRESENIUS Se & Co KGAA	66,750	3,624,409
10)	TYLER Technologies, Inc.	16,155	3,489,844

	Ten Largest Fixed Income Holdings (NOTES & BONDS)	INTEREST RATE	MATURITY DATE	PAR VALUE/ SHARES	FAIR VALUE
1)	US Treasury Note	2.250%	03/31/2021	7,638,644	$7,697,997
2)	US Treasury Bond	2.500	05/15/2046	6,348,944	6,312,247
3)	US Treasury Note	1.875	12/31/2019	5,326,235	5,321,867
4)	Federal home LN BK CONS BD	VAR RT	01/04/2021	3,185,785	3,181,357
5)	Federal home LN BK CONS BD	VAR RT	12/18/2020	2,923,320	2,921,011
6)	US Treasury Note	2.375	05/15/2029	2,497,945	2,581,377
7)	Commit to Purchase FNMA SF MTG	4.500	07/01/2049	2,398,390	2,506,197
8)	US Treasury Note	2.625	02/15/2029	2,321,460	2,448,049
9)	Commit to Purchase FNMA SF MTG	3.500	07/01/2049	2,280,733	2,331,775
10)	Commit to Purchase FNMA SF MTG	3.000	08/01/2049	2,230,955	2,248,178

*A complete list of the portfolio holdings is available upon request.

Schedule of Fees
(Year Ended June 30, 2019)
(*in Thousands*)

Investment Services	Assets Under Management*	Fees
Domestic Equity Managers	$ 696,385	$ 3,284
International Equity Managers	670,326	3,313
Fixed Income Managers	575,989	2,575
Private Equity Managers	168,931	5,518
Real Estate Managers	150,264	1,740
Hedge Fund of Funds Managers	119	-
Emerging Market Debt Manager	114,915	807
Global Asset Allocation Managers	420,339	2,583
Short-Term Investment Manager	3,849	-
Other Investment Service Fees:		
Custodian		304
Investment consultant		314
Total	$2,801,117	$20,438

*The Total Fund shown above in the amount of $2,801,117 million includes short-term investments of $36.495 million, accrued interest and dividends receivable of $3,313 million, receivables for investment sold of $4,648 million and payables for investment purchased of $23.5 million. These items are separately reported from "Total Investments" in the Statement of Fiduciary Net Position.

Schedule of Commissions
(Year Ended June 30, 2019)

Investment Broker Firms	Number of Shares Traded	Total Commissions	Commission Per Share
Citigroup GBL MKTS/Saloman, New York	574,976	$25,963	0.05
Stifel Nicolaus	465,957	13,942	0.03
Barclays Capital LE, New York	346,149	13,634	0.04
Baird, Robert W & Co. Inc., Milwaukee	313,153	11,444	0.04
Raymond James & Associates, Inc.	267,452	9,663	0.04
Loop Capital Markets, New Jersey	761,916	8,272	0.01
Penserra Securities, New York	265,485	7,226	0.03
Jonestrading Inst SVCS LLC, New York	178,740	6,145	0.03
Davidson (DA) & CO, Inc.	276,019	5,664	0.02
Williams Capital Group LP, Jersey City	234,293	5,663	0.02
BNY Convergex Execution Sol, New York	596,978	5,611	0.01
Keybanc Capital Markets Inc, New York	161,082	5,091	0.03
Miscellaneous (Under $5,000)	10,822,703	124,036	0.01
Total	15,264,903	$242,354	

Investment Summary

(Year Ended June 30, 2019)
(*in Thousands*)

TYPE OF INVESTMENTS	FAIR VALUE	% of FAIR VALUE
Fixed Income:		
U.S. Government Obligations	$45,404	1.6%
U.S. Agencies Securities	45,061	1.6
Corporate Bonds	120,122	4.3
Foreign Debt	21,960	0.8
Commingled Fixed Income Funds	455,900	16.4
Total Fixed Income	$688,447	24.8%
Common Stock:		
Communication Services	$21,385	0.8%
Consumer Discretionary	31,365	1.1
Consumer Staples	24,507	0.9
Energy	22,923	0.8
Financial Services	110,986	4.0
Health Care	67,909	2.4
Industrials	62,276	2.2
Materials & Processing	36,990	1.3
Producer Durables	27,147	1.0
Technology	73,482	2.6
Utilities	15,194	0.5
Total Common Stock	$494,164	17.8%
Other Investments:		
Commingled Equity Funds - Domestic	$410,811	14.8%
Commingled Equity Funds - International	446,818	16.1
Real Estate Funds	150,264	5.4
Hedge Funds	120	0.0
Private Equity Funds	169,243	6.1
Global Asset Allocation Funds	420,339	15.1
Total Other Investments	$1,597,595	57.5%
Total Investments at fair value	$2,780,206	100.0%

ACTUARIAL SECTION

KORN FERRY

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Suite 920
Reston, VA 20190
T: 703-761-7020
http://www.kornferry.com

Actuary's Certification Letter

December 19, 2019

Board of Trustees
Employees' Retirement System of Baltimore County
400 Washington Avenue
Towson, Maryland 21204

Re: Actuarial Certification for the June 30, 2019 Financial Report

Members of the Board:

The following sets forth the actuarial information for the June 30, 2019 Comprehensive Annual Financial Report (CAFR) for the Employees' Retirement System of Baltimore County, Maryland. The valuation was conducted as of July 1, 2018 and the results were rolled forward to June 30, 2019 for financial reporting purposes. Valuations are conducted annually. The accounting results are based on plan provisions, census data and asset data submitted by the County. We have relied on this information for purposes of preparing these accounting results, but we have not performed an audit.

We prepared the following schedules for Plans A and B:

Financial Section

1. Net Pension Liability of the County
2. Changes in the County's Net Pension Liability and Related Ratios
3. Schedule of County Contributions
4. Changes in the Net Pension Liability

Actuarial Section

5. Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions
6. Components of County's Pension Expense for the Fiscal Year Ended June 30, 2019
7. Schedule of Differences between Projected and Actual Earnings on Pension Plan Investments
8. Schedule of Differences between Expected and Actual Experience
9. Schedule of Changes of Assumptions
10. Schedule of Active Member Valuation Data
11. Schedule of Retiree and Beneficiary Data
12. Solvency Test
13. Change in Unfunded Accrued Liability
14. Allocation of Amortization Bases

Statistical Section

15. Retirees and Beneficiaries - Distribution of Members by Type of Retirement
16. Retirees and Beneficiaries - Distribution to Members by Option Selected
17. Schedule of Participating Employers

Assumptions

The assumptions and methods used to determine the Actuarially Determined Contribution (ADC) and the preparation of the financial reporting under GASB 67/68 comply with the Actuarial Standards of Practice (ASOPs). These assumptions, other than the interest (discount) rate assumption, are primarily based upon recommendations made in the 2011-2016 actuarial experience study. The System's overall funding objective is to accumulate sufficient assets over time to meet its long-term benefit obligations as they become due.

The methods, assumptions, and participant data used are detailed in the January 1, 2019 actuarial valuation report with the exception of the actuarial cost method. These calculations are based on the Entry Age Normal cost method as required by GASB 67. The calculation of the Actuarially Determined Contribution for fiscal year ended June 30, 2019 is contained in the July 1, 2017 actuarial valuation report.

The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. Korn Ferry is independent of Baltimore County Government. We are not aware of any relationship or interest that would impair the objectivity of our work. The January 1, 2019 actuarial valuation report prepared by Bolton Partners, Inc. contains information that is integral to the results contained herein.

Respectfully submitted,
Korn Ferry

By: ______________________________	By: ______________________________
Brent M. Mowery, F.S.A.	Craig R. Graby
Member American Academy of Actuaries	Member American Academy of Actuaries
Enrolled Actuary No. 17-3885	Enrolled Actuary No. 17-7319

Summary of Actuarial Assumptions and Methods

ASSUMPTIONS

Interest Rate: 6.375% per annum, compounded annually.

Inflation: 3.0% per year.

Salary Increase: Representative rates are as follows:

Age Band	Annual Rates of Salary Increase	
	General Employees, Correctional Officers and Deputy Sheriffs	Police Officers and Firefighters
Under 25	7.50%	10.00%
25 - 29	6.50	6.50
30 - 34	3.75	4.00
35 - 39	2.75	3.50
40 - 44	2.75	3.00
45 - 49	2.50	2.50
50 - 54	2.00	2.00
55 or Over	1.75	1.75

Salary increases are based on the 2018 experience study.

Expenses: The assumed interest rate is gross of the anticipated future administrative expenses of the fund. All administrative and operating expenses of the System are included in the normal cost.

DROP Election Rate:

Group	Election Rate
General Employee	50%
Agency	30%
Police	80%
Fire	85%
Corrections	95%

Rates are based on the 2018 experience study.

Summary of Actuarial Assumptions and Methods, continued

Illustrative Rates of Separation from Service:
Sample rates are as follows:

Age	Withdrawal: Refund Before 10 Years of Service	Withdrawal: Refund After 10 Years of Service	Withdrawal: Termination Benefit After 10 Years of Service	Disability: Ordinary	Disability: Accidental	Death: Ordinary: Male	Death: Ordinary: Female	Death: Accidental
General Employees, Correctional Officers and Deputy Sheriffs								
20	15.23%			0.01%	0.00%	0.02%	0.01%	0.00%
25	15.23			0.02	0.00	0.03	0.01	0.00
30	8.60	0.95%	2.84%	0.03	0.01	0.04	0.02	0.00
35	7.71	0.69	2.08	0.05	0.01	0.07	0.03	0.00
40	7.36	0.60	1.79	0.09	0.01	0.09	0.04	0.00
45	7.28	0.54	1.63	0.13	0.01	0.11	0.07	0.00
50	6.68	0.31	0.94	0.18	0.01	0.32	0.14	0.01
55	5.67	0.45	1.34	0.22	0.02	0.35	0.27	0.01
60	11.81	0.54	1.62	0.22	0.02	0.53	0.53	0.01
64	9.92	0.11	0.32	0.22	0.02	0.83	0.80	0.02
65	28.35	0.00	0.00	0.22	0.02	0.92	0.88	0.02
69				0.22	0.02	1.38	1.29	0.03
Police Officers								
20	2.50%			0.00%	0.03%	0.02%	0.01%	0.01%
25	1.30			0.00	0.03	0.03	0.01	0.01
30	1.20	0.27%	0.27%	0.00	0.04	0.04	0.02	0.02
35	0.80	0.17	0.17	0.00	0.07	0.07	0.03	0.02
40	0.60	0.10	0.10	0.00	0.05	0.09	0.04	0.04
45	1.80	0.08	0.08	0.00	0.08	0.11	0.07	0.05
50	1.20	0.06	0.06	0.00	0.13	0.32	0.14	0.08
55	0.75	0.05	0.05	0.00	0.30	0.35	0.27	0.14
59	0.15	0.01	0.01	0.00	0.40	0.48	0.47	0.24
60				0.00	0.40	0.53	0.53	0.27
64				0.00	0.40	0.83	0.80	0.40
Firefighters								
20	3.75%			0.00%	0.02%	0.02%	0.01%	0.01%
25	1.95			0.00	0.02	0.03	0.01	0.01
30	1.80	0.89%	0.89%	0.00	0.02	0.04	0.02	0.02
35	1.20	0.57	0.57	0.00	0.06	0.07	0.03	0.02
40	0.90	0.35	0.35	0.00	0.07	0.09	0.04	0.04
45	0.90	0.26	0.26	0.00	0.08	0.11	0.07	0.05
50	0.60	0.21	0.21	0.00	0.12	0.32	0.14	0.08
55	0.38	0.17	0.17	0.00	0.35	0.35	0.27	0.14
59	0.08	0.16	0.16	0.00	0.36	0.48	0.47	0.24
60				0.00	0.36	0.53	0.53	0.27
64				0.00	0.36	0.83	0.80	0.40

Rates are based on the 2018 experience study.

Summary of Actuarial Assumptions and Methods, continued
Retirement Rates for General Employees:
Sample rates are as follows:

Plan A (Members hired before July 1, 2007)									Plan B Members Hired after June 30, 2007
	Years of Credited Service								
Age	5-9	10-14	15	20	25	30	35	>=40	
Under 55	-	-	-	-	-	12.44%	12.44%	-	0.00%
55	-	-	-	13.89%	13.89%	13.00	13.00	-	11.05
56	-	-	-	4.39	4.39	13.00	13.00	-	11.05
57	-	-	-	2.93	2.93	13.00	13.00	-	11.05
58	-	-	-	4.68	4.68	13.00	13.00	-	11.05
59	-	-	-	6.58	6.58	16.50	16.50	-	11.05
60	4.00%	8.00%	22.50%	45.00	16.50	16.50	14.75	14.75%	11.05
61	4.00	8.00	8.00	45.00	23.25	23.25	19.75	19.75	12.71
62	4.00	8.00	8.00	15.00	23.25	23.25	21.50	21.50	23.11
63	4.00	20.00	20.00	15.00	13.00	13.00	20.00	20.00	16.48
64	4.00	20.00	20.00	15.00	13.00	13.00	21.75	21.75	18.69
65	13.64	13.64	13.64	23.25	23.25	26.75	26.75	51.25	30.29
69	9.91	9.91	9.91	20.00	13.00	30.50	30.50	48.00	25.76
> =70	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	24.44

Rates are based on the 2018 experience study. Retirement assumptions were selected based on DROP exit experience.

Summary of Actuarial Assumptions and Methods, continued
Retirement Rates for Correctional Officers and Deputy Sheriffs:
Sample rates are as follows:

	Plan A (Members hired before July 1, 2007)								Plan B Members Hired after June 30, 2007
	Years of Credited Service								
Age	5-9	10-14	15	20	25	26	27	>=28	
Under 60	-	-	-	20.00%	27.54%	20.00%	37.19%	17.19%	14.95%
60	4.00%	10.00%	10.00%	20.00	27.54	20.00	37.19	17.19	14.95
61	4.00	12.00	12.00	20.00	29.48	20.00	39.77	19.77	17.19
62	4.00	14.00	14.00	20.00	41.62	20.00	55.97	35.97	31.27
63	4.00	16.00	16.00	20.00	33.88	20.00	45.65	25.65	22.30
64	4.00	18.00	18.00	15.28	36.46	20.00	49.08	29.08	25.29
65	4.00	20.00	20.00	27.59	45.69	20.00	61.14	41.14	40.99
69	4.00	28.00	28.00	14.69	14.69	20.00	48.49	28.49	29.77
> =70	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Rates are based on the 2018 experience study.

Summary of Actuarial Assumptions and Methods, continued
Retirement Rates for Police Officers:
Sample rates are as follows:

Plan A (Members hired before July 1, 2007)												Plan B Members Hired after June 30, 2007
	Years of Credited Service											
Age	5-9	10-14	15	20	25	26	27	28	29	30	>=35	
40	-	-	-	0.95%	1.65%	2.30%	15.95%	4.45%	7.75%	7.75%	17.40%	0.00%
45	-	-	-	0.75	1.70	2.45	8.10	4.65	8.10	8.10	18.25	9.41
50	-	-	-	1.10	8.65	2.65	8.30	5.10	8.85	8.85	19.95	9.91
55	0.30%	2.50%	2.50%	2.85	12.90	6.90	12.35	13.20	22.95	22.95	51.65	19.30
56	0.30	3.00	3.00	2.60	12.20	6.20	11.70	11.90	20.70	20.70	46.55	17.79
57	0.30	3.50	3.50	1.10	8.65	2.65	8.30	5.05	8.80	8.80	19.80	9.86
58	0.30	4.00	4.00	1.15	8.75	2.75	8.35	5.25	9.10	9.10	20.45	10.07
59	0.30	4.50	4.50	1.60	8.90	2.90	8.50	5.55	9.60	9.60	21.65	10.41
60	0.30	5.00	5.00	23.75	81.25	71.25	40.63	50.00	50.00	100.00	100.00	95.00
61	0.30	5.50	5.50	10.00	40.00	30.00	20.00	30.00	30.00	100.00	100.00	40.00
62	0.30	6.00	6.00	18.75	66.25	56.25	33.13	50.00	50.00	100.00	100.00	75.00
63	0.30	6.50	6.50	12.50	47.50	37.50	23.75	37.50	37.50	100.00	100.00	50.00
64	0.30	7.00	7.00	12.50	52.00	37.50	23.75	37.50	37.50	100.00	100.00	50.00
65	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Rates are based on the 2018 experience study.

Summary of Actuarial Assumptions and Methods, continued
Retirement Rates for Firefighters:
Sample rates are as follows:

Plan A (Members hired before July 1, 2007)												Plan B Members Hired after June 30, 2007
Years of Credited Service												
Age	5-9	10-14	15-19	20	25	26	27	28	29	30	>=35	
45-49	-	-	-	-	4.75%	4.50%	2.25%	2.25%	2.25%	2.25%	18.00%	0.00%
50	-	-	-	1.50%	8.85	3.85	1.90	1.90	1.90	1.90	15.38	10.25
55	-	-	-	2.00	12.45	7.45	3.75	3.75	3.75	3.75	29.84	19.89
56	-	-	-	2.00	11.85	6.85	3.45	3.45	3.45	3.45	27.48	18.32
57	-	-	-	2.00	8.80	3.80	1.90	1.90	1.90	1.90	15.16	10.10
58	-	-	-	2.00	8.85	3.85	1.95	1.95	1.95	1.95	15.46	10.31
59	-	-	-	2.00	10.30	4.00	2.00	2.00	2.00	2.00	15.98	10.65
60	3.00%	25.00%	25.00%	2.00	47.50	42.50	15.95	15.95	15.95	63.75	100.00	85.00
61	3.00	35.00	35.00	2.00	22.50	17.50	8.75	6.55	6.55	26.25	100.00	35.00
62	3.00	45.00	45.00	2.00	35.00	30.00	15.00	15.00	11.25	45.00	100.00	60.00
63	3.00	55.00	55.00	2.00	25.00	20.00	10.00	10.00	10.00	30.00	100.00	40.00
64	3.00	65.00	65.00	2.00	30.00	25.00	12.50	12.50	12.50	50.00	100.00	50.00
65	100.00	100.00	100.00	100.00	50.00	50.00	25.00	25.00	25.00	100.00	100.00	100.00
>=66	100.00	100.00	100.00	100.00	50.00	50.00	25.00	25.00	25.00	25.00	100.00	100.00

Rates are based on the 2018 experience study.

Summary of Actuarial Assumptions and Methods, continued

Death after Retirement: The mortality for service retirements and dependent beneficiaries is 108% of the RP-2000 Healthy Annuitant Table for males, projected to 2032 with Scale AA and 100% of the RP-2000 Healthy Annuitant Table for females, projected to 2032 with Scale AA. For disability retirements, the mortality tables are the RP-2000 Disabled Annuitant Tables, projected to 2032 with Scale AA. Illustrative rates are shown below:

	Annual Rates of Mortality			
	Service Pensioners		Disability Pensioners	
Age	Males	Female	Male	Female
45	0.107%	0.067%	1.485%	0.445%
50	0.323	0.135	1.620	0.666
55	0.345	0.273	1.918	1.279
60	0.528	0.528	2.509	1.860
65	0.923	0.883	3.196	2.387
70	1.479	1.426	3.859	3.206
75	2.602	2.174	5.227	4.039
80	5.040	3.664	7.929	5.776
85	9.554	6.388	11.310	8.265

Marital Status: 90% of active Police Officers and Firefighters are assumed to be married. For all other employees, 90% of active males and 50% of active females are assumed to be married. In all cases, it is assumed that the female spouse is three years younger than the male spouse.

Credit for Unused Sick Leave: For members entitled to receive credit for unused sick leave, it was assumed that each member will accumulate such credit as follows:

Supervisory, management and confidential (SMC) members, other than Firefighters	0.75 year
Firefighters including SMC members	1.00 year
Police Officers, excluding SMC Police Officers	0.50 year
Employees other than Police Officers and Firefighters, excluding SMC members	0.50 year

Summary of Actuarial Assumptions and Methods, continued

Actuarial Cost Method: Projected Unit Credit. Changes in benefits and assumptions and gains and losses are amortized over 27 years with payments that increase 3% per annum. Gains and losses due to actual salary experience differing from that assumed are amortized over 10 years with payments that increase 3% per annum.

The assumptions and methods used to determine the Actuarially Determined Contribution (ADC) and the preparation of the financial reporting under GASB 67/68 comply with the Actuarial Standards of Practice (ASOPs). These assumptions are based on the 2018 experience study. The System's overall funding objective is to accumulate sufficient assets over time to meet its long-term benefit obligations as they become due. The methods, assumptions, and participant data used are detailed in the January 1, 2019 actuarial valuation report with the exception of the actuarial cost method. These calculations are based on the Entry Age Normal cost method as required by GASB67.

Asset Valuation Method: A ten-year moving average market value of assets that spreads the difference between the actual investment income and the expected income on the market value (based on the valuation interest rate) over a period of ten years. For purposes of this calculation, the gain/(loss) is defined as the difference between the actual and the expected return on the market value of assets. There is no corridor limiting the valuation assets to a certain percentage of the market value.

Liability Due to Assets in Post-Retirement Increase Fund: Liabilities for retirees and beneficiaries include the value of assets in the Post-Retirement Increase Fund.

Payroll Growth: 3% per annum, compounded annually.

Part-Time Employees: For valuation purposes, all part-time County employees are assumed to be full-time. All part-time Agency employees are assumed to be 50% of full-time equivalence.

Data: The valuation is based on members of the System as of June 30, 2018 and does not take into account future members. All census data was supplied by the County and was subject to reasonable consistency checks.

Roll Forward:
Total Plan A liabilities were rolled forward to the measurement date. The liability as of the census date and half of the normal cost were given a half year of interest to the valuation date. The resulting liability was reduced by half of the calendar year benefit payments with a quarter year of interest. The final liability as of the measurement date was allocated to the groups (e.g. General Employees, Agency, Police, Fire, and Corrections) based on the liabilities as of the census date. The same methodology was used for Plan B.

DROP Loads
Separate DROP loads for Plan A participants were determined by group, for each possible age and service combination based on the average service in the DROP. The DROP load is equal to the present value of the benefit at DROP Exit if the retiree elected the DROP benefit divided by the present value of the benefit if the retiree elected to not receive a DROP benefit.

Other Valuation Assumptions:
Decrements are assumed to occur at the beginning of the year.
Employee Contributions are assumed to be in the middle of the year.

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

GENERAL EMPLOYEES – THE SYSTEM

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2010	5	6,336	$282,299,161	$44,555	4.0%	1.1%
2011	5	6,248	285,485,138	45,692	2.6	3.6
2012	5	5,893	273,433,117	46,400	1.5	1.7
2013	5	5,916	277,270,227	46,868	1.0	1.8
2014	5	5,974	281,585,487	47,135	0.6	2.1
2015	5	6,170	290,549,549	47,091	(0.1)	0.1
2016	5	6,254	303,685,765	48,559	3.1	1.0
2017	5	6,280	317,642,385	50,580	4.2	1.6
2018*	5	6,354	327,729,955	51,579	2.0	2.9
2019	5	6,376	331,588,095	52,006	0.8	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

GENERAL EMPLOYEES – PLAN A**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	5	3,891	$200,020,320	$51,406	N/A	2.1%
2015	5	3,602	188,735,135	52,397	1.9%	0.1
2016	5	3,325	183,185,133	55,093	5.1	1.0
2017	5	3,006	175,229,046	58,293	5.8	1.6
2018*	5	2,750	167,148,407	60,781	4.3	2.9
2019	5	2,553	156,697,428	61,378	1.0	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

SCHEDULE OF ACTIVE MEMBER VALUATION DATA, CONTINUED

GENERAL EMPLOYEES – PLAN B**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	5	2,083	$81,565,167	$39,158	N/A	2.1%
2015	5	2,568	101,814,414	39,647	1.3%	0.1
2016	5	2,929	120,500,632	41,141	3.8	1.0
2017	5	3,274	142,413,339	43,498	5.7	1.6
2018*	5	3,604	160,581,548	44,556	2.4	2.9
2019	5	3,823	174,890,668	45,747	2.7	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

POLICE OFFICERS – THE SYSTEM

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2010	1	1,927	$144,883,413	$75,186	2.5%	1.1%
2011	1	1,919	148,430,584	77,348	2.9	3.6
2012	1	1,833	140,236,837	76,507	(1.1)	1.7
2013	1	1843	146,580,108	79,533	4.0	1.8
2014	1	1,819	146,728,596	80,664	1.4	2.1
2015	1	1,870	150,239,354	80,342	(0.4)	0.1
2016	1	1,852	153,813,966	83,053	3.4	1.0
2017	1	1,868	162,460,215	86,970	4.7	1.6
2018*	1	1,890	161,181,034	85,281	(1.9)	2.9
2019	1	1,889	161,103,668	85,285	0.0	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

SCHEDULE OF ACTIVE MEMBER VALUATION DATA, CONTINUED

POLICE OFFICERS – PLAN A**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	1	1,528	$131,455,172	$86,031	N/A	2.1%
2015	1	1,488	129,997,544	87,364	1.5%	0.1
2016	1	1,435	130,464,784	90,916	4.1	1.0
2017	1	1,357	132,892,757	97,931	7.7	1.6
2018*	1	1,295	126,539,167	97,714	(0.2)	2.9
2019	1	1,240	122,639,051	98,902	1.2	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

POLICE OFFICERS – PLAN B**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	1	291	$15,273,425	$52,486	N/A	2.1%
2015	1	382	20,241,810	52,989	1.0%	0.1
2016	1	417	23,349,182	55,993	5.7	1.0
2017	1	511	29,567,458	57,862	3.3	1.6
2018*	1	595	34,641,867	58,222	0.6	2.9
2019	1	649	38,464,617	59,268	1.8	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

Schedule of Active Member Valuation Data, continued

FIREFIGHTERS – THE SYSTEM

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2010	1	991	$69,191,965	$69,820	(0.2)%	1.1%
2011	1	1,013	71,676,716	70,757	1.3	3.6
2012	1	958	66,958,931	69,895	(1.2)	1.7
2013	1	939	68,076,750	72,499	3.7	1.8
2014	1	963	69,048,320	71,701	(1.1)	2.1
2015	1	978	69,354,780	70,915	(1.1)	0.1
2016	1	994	72,235,285	72,671	2.5	1.0
2017	1	1,011	78,620,633	77,765	7.0	1.6
2018*	1	1,035	78,595,034	75,937	(2.4)	2.9
2019	1	1,051	80,064,623	76,179	0.3	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

FIREFIGHTERS – PLAN A**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	1	676	$56,214,397	$83,157	N/A	2.1%
2015	1	640	53,820,307	84,094	1.1%	0.1
2016	1	603	53,148,984	88,141	4.8	1.0
2017	1	563	54,731,489	97,214	10.3	1.6
2018*	1	516	50,686,571	98,230	1.0	2.9
2019	1	491	49,402,764	100,617	2.4	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

SCHEDULE OF ACTIVE MEMBER VALUATION DATA, CONTINUED

FIREFIGHTERS – PLAN B**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	1	287	$12,833,923	$44,718	N/A	2.1%
2015	1	338	15,534,473	45,960	2.8%	0.1
2016	1	391	19,086,301	48,814	6.2	1.0
2017	1	448	23,889,144	53,324	9.2	1.6
2018*	1	519	27,908,464	53,774	0.8	2.9
2019	1	560	30,661,859	54,753	1.8	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

CORRECTIONAL OFFICERS and DEPUTY SHERIFFS – THE SYSTEM

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2010	1	379	$18,750,737	$49,474	1.5%	1.1%
2011	1	391	19,729,598	50,459	2.0	3.6
2012	1	398	21,024,482	52,825	4.7	1.7
2013	1	401	21,574,912	53,803	1.9	1.8
2014	1	397	21,311,072	53,680	(0.2)	2.1
2015	1	394	21,185,562	53,770	0.2	0.1
2016	1	425	22,924,402	53,940	0.3	1.0
2017	1	421	23,212,255	55,136	2.2	1.6
2018*	1	415	23,060,078	55,566	0.8	2.9
2019	1	393	22,086,250	56,199	1.1	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

SCHEDULE OF ACTIVE MEMBER VALUATION DATA, CONTINUED

CORRECTIONAL OFFICERS and DEPUTY SHERIFFS – PLAN A**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	1	258	$14,869,872	$57,635	N/A	2.1%
2015	1	238	13,678,567	57,473	(0.3)%	0.1
2016	1	219	13,203,959	60,292	4.9	1.0
2017	1	200	12,441,204	62,206	3.2	1.6
2018*	1	177	11,345,890	64,101	3.0	2.9
2019	1	159	10,323,491	64,928	1.3	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

CORRECTIONAL OFFICERS and DEPUTY SHERIFFS – PLAN B**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	1	139	$6,441,200	$46,340	N/A	2.1%
2015	1	156	7,506,995	48,122	3.8%	0.1
2016	1	206	9,720,442	47,187	(1.9)	1.0
2017	1	221	10,771,051	48,738	3.3	1.6
2018*	1	238	11,714,189	49,219	1.0	2.9
2019	1	234	11,762,759	50,268	2.1	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

SCHEDULE OF ACTIVE MEMBER VALUATION DATA, CONTINUED

ALL GROUPS – THE SYSTEM

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2010	5	9,633	$515,125,276	$53,475	3.1%	1.1%
2011	5	9,571	525,322,036	54,887	2.6	3.6
2012	5	9,082	501,653,367	55,236	0.6	1.7
2013	5	9,099	513,501,997	56,435	2.2	1.8
2014	5	9,153	518,673,476	56,667	0.4	2.1
2015	5	9,412	531,329,246	56,452	(0.4)	0.1
2016	5	9,525	552,659,417	58,022	2.8	1.0
2017	5	9,580	581,935,488	60,745	4.7	1.6
2018*	5	9,694	590,566,102	60,921	0.3	2.9
2019	5	9,710	594,842,637	61,261	0.6	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

ALL GROUPS – PLAN A**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	5	6,353	$402,559,762	$63,365	N/A	2.1%
2015	5	5,968	386,231,554	64,717	2.1%	0.1
2016	5	5,582	380,002,860	68,076	5.2	1.0
2017	5	5,126	375,294,496	73,214	7.5	1.6
2018*	5	4,738	355,720,034	75,078	2.5	2.9
2019	5	4,443	339,062,734	76,314	1.6	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

SCHEDULE OF ACTIVE MEMBER VALUATION DATA, CONTINUED

ALL GROUPS – PLAN B**

Valuation as of June 30	Participating Employers	Number of Active Members	Valuation Payroll	Average Salary	Percent Increase (Decrease)	CPI % Increase
2014	5	2,800	$116,113,715	$41,469	N/A	2.1%
2015	5	3,444	145,097,692	42,131	1.6%	0.1
2016	5	3,943	172,656,557	43,788	3.9	1.0
2017	5	4,454	206,640,992	46,394	6.0	1.6
2018*	5	4,956	234,846,068	47,386	2.1	2.9
2019	5	5,267	255,779,903	48,563	2.5	1.6

* Pay does not include 3% COLA deferred from July 1, 2018 to January 1, 2019

**Ten-year historical trend information is not available but will be compiled going forward.

SCHEDULE OF RETIREE AND BENEFICIARY DATA – THE SYSTEM

Valuation as of June 30	Added to Rolls		Removed from Rolls		Rolls – End of Year		Percent Increase In Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
2010	395	$12,662,248	201	$3,237,920	6,704	$154,019,832	6.5%	$22,974
2011	303	12,530,487	235	3,946,193	6,772	162,604,126	5.6	24,011
2012	664	24,367,514	205	3,204,235	7,231	183,767,405	13.0	25,414
2013	380	14,175,414	229	3,181,871	7,382	194,760,948	6.0	26,383
2014	381	11,363,715	267	2,338,972	7,496	203,785,691	4.6	27,186
2015	363	12,015,865	246	3,800,294	7,613	212,001,262	4.0	27,847
2016	369	12,252,451	226	4,428,386	7,756	219,825,327	3.7	28,343
2017	457	15,475,435	247	4,189,937	7,966	231,110,825	5.1	29,012
2018	414	14,425,273	242	2,271,372	8,138	243,264,725	5.3	29,892
2019	323	12,265,930	261	4,857,676	8,200	250,672,980	3.0	30,570

SCHEDULE OF RETIREE AND BENEFICIARY DATA – PLAN A

Valuation as of June 30	Added to Rolls		Removed from Rolls		Rolls – End of Year		Percent Increase In Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
2010	395	$12,662,248	201	$3,237,920	6,704	$154,019,832	6.5%	$22,974
2011	303	12,530,487	235	3,946,193	6,772	162,604,126	5.6	24,011
2012	664	24,367,514	205	3,204,235	7,231	183,767,405	13.0	25,414
2013	380	14,175,414	229	3,181,871	7,382	194,760,948	6.0	26,383
2014	381	11,363,715	267	2,338,972	7,496	203,785,691	4.6	27,186
2015	363	12,015,865	246	3,800,294	7,613	212,001,262	4.0	27,847
2016	367	12,169,536	226	4,428,386	7,754	219,742,412	3.7	28,339
2017	457	15,475,435	247	4,189,937	7,964	231,027,910	5.1	29,009
2018	409	14,337,208	242	2,271,372	8,131	243,093,746	5.2	29,897
2019	315	12,148,956	261	4,857,676	8,185	250,385,026	3.0	30,591

SCHEDULE OF RETIREE AND BENEFICIARY DATA – PLAN B*

Valuation as of June 30	Added to Rolls		Removed from Rolls		Rolls – End of Year		Percent Increase In Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
2016	2	$82,915	-	-	2	$82,915	N/A	$41,457
2017	-	-	-	-	2	82,915	0.0	41,457
2018	5	88,065	-	-	7	170,980	106.2	24,426
2019	8	116,974	-	-	15	287,954	68.4	19,197

*Prior to FY 2016, there were no Plan B retirees.

Solvency Test

Baltimore County's funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the system are level in concept and soundly executed, the system will pay all promised benefits when due – the ultimate test of financial soundness. Testing for level contribution rates is the long-term test.

A short conditions test is one means of checking a system's progress under its funding program. In a short condition test, the system's present assets (cash and investments) are compared with: (1) the liabilities for future benefits to present retired lives; (2) the liabilities for service already rendered by active members. In a system that has been following the discipline of level percent of payroll financing, the liabilities for future benefits to present retired lives (liability B) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability A & C) will be at least partially covered by the remainder of present assets. Generally, if the system has been using level cost financing, the funded portion of liability A & C will increase over time. This is the relationship between accrued liabilities and assets of the System over the last ten years:

The System

	Accrued Liability for:				Portion of Accrued Liability Covered by Actuarial Value of Assets		
Valuation as of June 30	(A) Active Member Contribution	(B) Retirees and Beneficiaries	(C) Active Member Employer Financed	Actuarial Value of Assets	(A)	(B)	(C)
2008[1]	$391,743,335	$1,307,885,347	$791,713,328	$2,191,623,378	100.0%	100.0%	62.1%
2009[2]	417,514,605	1,359,000,212	823,155,619	2,143,616,137	100.0	100.0	44.6
2010[3]	447,377,958	1,446,963,230	851,674,652	2,196,914,646	100.0	100.0	35.5
2011	473,082,150	1,484,234,414	906,536,155	2,213,857,844	100.0	100.0	28.3
2012[4]	468,059,738	1,783,341,001	903,115,828	2,483,511,733	100.0	100.0	25.7
2013[5]	483,966,112	1,992,569,006	990,069,135	2,490,481,231	100.0	100.0	1.4
2014	490,356,233	2,041,957,711	1,113,950,591	2,517,944,853	100.0	99.3	0.0
2015[6]	513,180,004	2,153,486,824	1,167,591,591	2,553,596,803	100.0	94.7	0.0
2016[7]	533,502,719	2,296,643,507	1,317,362,524	2,698,256,578	100.0	94.3	0.0
2017	533,502,719	2,296,643,507	1,317,362,524	2,698,256,578	100.0	94.3	0.0
2018[8]	547,074,123	2,410,021,364	1,381,716,921	2,672,929,761	100.00	88.2	0.0

(1) Amortization period was changed to 30 years.

(2) Actuarial Asset Method is revised to remove 14% Corridor around the Fair Value and the smoothing period was changed from 4 to 5 years. Salary increase rates for all members were reduced.

(3) Actuarial Asset Method change: The Smoothing period was changed from 5 to 10 years.

(4) Interest rate decreased from 7.875% to 7.25%, which was offset by the net proceeds from the Pension Obligation Bonds. In addition, the System also implemented the Retirement Incentive Plan early retirement window.

(5) Interest rate decreased from 7.25% to 7.00% and assumption changes recommended in the 2011 experience study were adopted.

(6) Interest rate decreased from 7.00% to 6.75%.

(7) Interest rate decreased from 6.75% to 6.375%.

(8) Assumption changes recommended in the 2011-2016 experience study were adopted.

Solvency Test, continued

Plan A*

Valuation as of June 30	Accrued Liability for: (A) Active Member Contribution	(B) Retirees and Beneficiaries	(C) Active Member Employer Financed	Actuarial Value of Assets	Portion of Accrued Liability Covered by Actuarial Value of Assets (A)	(B)	(C)
2014	$461,795,813	$2,041,957,711	$1,103,649,784	$2,485,014,469	100.0%	99.1%	0.0%
2015(6)	474,797,680	2,153,486,824	1,151,636,214	2,510,144,678	100.0	94.5	0.0
2016(7)	483,927,859	2,295,696,303	1,289,553,278	2,636,841,308	100.0	93.8	0.0
2017	483,474,933	2,409,134,316	1,341,860,335	2,594,283,037	100.0	87.6	0.0
2018(8)	485,913,053	2,540,392,483	1,348,198,379	2,603,357,863	100.0	83.4	0.0

(6) Interest rate decreased from 7.00% to 6.75%.

(7) Interest rate decreased from 6.75% to 6.375%.

(8) Assumption changes recommended in the 2011-2016 experience study were adopted.

Plan B*

Valuation as of June 30	Accrued Liability for: (A) Active Member Contribution	(B) Retirees and Beneficiaries	(C) Active Member Employer Financed	Actuarial Value of Assets	Portion of Accrued Liability Covered by Actuarial Value of Assets (A)	(B)	(C)
2014	$28,380,420	-	$10,300,807	$32,930,384	100.0%	100.0%	44.2%
2015(6)	38,382,323	-	15,955,378	43,452,125	100.0	100.0	31.8
2016(7)	49,574,860	$947,204	27,809,246	61,415,270	100.0	100.0	39.2
2017	63,599,190	887,048	39,856,586	78,646,724	100.0	100.0	35.5
2018(8)	83,039,319	2,140,185	35,656,056	101,965,983	100.0	100.0	47.1

(6) Interest rate decreased from 7.00% to 6.75%.

(7) Interest rate decreased from 6.75% to 6.375%.

(8) Assumption changes recommended in the 2011-2016 experience study were adopted.

*Ten-year historical trend information is not available but will be compiled going forward.

Change in Unfunded Accrued Liability – The System

As of July 1, 2018

Reconciliation of Gain (Loss) in the Unfunded Accrued Liability:	Amount
1. Unfunded Accrued Liability (UAL) at July 1, 2018	$1,660,486,038
2. Interest Charge at 6.375% to July 1, 2019	105,855,985
3. Contributions Toward Unfunded Accrued Liability	94,258,068
4. Projected UAL at July 1, 2019 [(1) + (2) - (3)]	1,672,083,955
5. Expected Unfunded Accrued Liability at July 1, 2019 (Based on the 2018 Actuarial Valuation)	1,744,764,774
6. Increase due to Plan Amendments	4,234,505
7. Increase due to Changes in Assumptions	16,243,558
8. Increase due to Salary Experience Greater than Assumed	43,291,417
9. Actual (Gain)/Loss [(5) – (4) – (6) – (7) –(8)]	$8,911,339

Plan A

Reconciliation of Gain (Loss) in the Unfunded Accrued Liability:	Amount
1. Unfunded Accrued Liability (UAL) at July 1, 2018	$1,634,584,284
2. Interest Charge at 6.375% to July 1, 2019	104,204,748
3. Contributions Toward Unfunded Accrued Liability	92,787,747
4. Projected UAL at July 1, 2019 [(1) + (2) - (3)]	1,646,001,285
5. Expected Unfunded Accrued Liability at July 1, 2019 (Based on the 2018 Actuarial Valuation)	1,726,831,987
6. Increase due to Plan Amendments	4,234,505
7. Increase due to Changes in Assumptions	32,867,849
8. Increase due to Salary Experience Greater than Assumed	38,766,162
9. Actual (Gain)/Loss [(5) – (4) – (6) – (7) –(8)]	$4,962,186

Change in Unfunded Accrued Liability – continued
As of July 1, 2018

Plan B

Reconciliation of Gain (Loss) in the Unfunded Accrued Liability:	Amount
1. Unfunded Accrued Liability (UAL) at July 1, 2018	$25,901,754
2. Interest Charge at 6.375% to July 1, 2019	1,651,237
3. Contributions Toward Unfunded Accrued Liability	1,470,321
4. Projected UAL at July 1, 2019 [(1) + (2) - (3)]	26,082,670
5. Expected Unfunded Accrued Liability at July 1, 2019 (Based on the 2018 Actuarial Valuation)	17,932,787
6. Increase due to Plan Amendments	-
7. Increase due to Changes in Assumptions	(16,624,291)
8. Increase due to Salary Experience Greater than Assumed	4,525,255
9. Actual (Gain)/Loss [(5) – (4) – (6) – (7) –(8)]	$3,949,153

Allocation of Amortization Bases
For the Year Ended
July 1, 2018

	Plan A	**Plan B**	**Total**	**Amortization Period**
2015 Fresh Start Employer Base	$1,311,279,047	11,525,174	1,322,804,221	27 Years
2016 (Gain)/Loss	148,858,294	230,000	149,088,294	27 Years
2016 Change in Assumptions	12,581,513	5,861,732	18,443,245	27 Years
2017 (Gain)/Loss	173,282,431	8,465,764	181,748,195	27 Years
2018 (Gain)/Loss	4,962,186	3,949,153	8,911,339	27 Years
2018 Change in Assumptions	32,867,849	(16,624,291)	16,243,558	27 Years
2018 (Gain)/Loss Due to Salary Experience	38,766,162	4,525,255	43,291,417	10 Years
2018 Plan Amendment	4,234,505	-	4,234,505	16 Years
Total	1,726,831,987	17,932,787	1,744,764,774	

Summary of Plan Provisions

The Employees' Retirement System provides members the following benefits:

- Retirement Benefits
- Disability Benefits
- Death Benefits

ELIGIBILITY

Members are designated as classified or merit system employees, part-time employees, non-merit employees, elected officials, department heads, or agency employees. Merit system employees included full-time general employees, police officers, firefighters, deputy sheriffs and correctional officers. Agency employees include the Board of Education, the Board of Library Trustees, the Community College of Baltimore County and the Baltimore County Revenue Authority. Agency employees that are not eligible to participate in the Maryland State Retirement and Pension Systems are entitled to membership in the System.

System membership is compulsory for merit system employees as a condition of employment, except for those members who were hired at age 55 or over. Merit employees, exclusive of police officers and firefighters, are required to join the System within the first sixty days of employment. Police officers and firefighters are required to join the System as a condition of employment.

Part-time employees, non-merit employees, elected officials, department heads, merit system employees hired at age 55 or over, and agency employees have the option to join the system within sixty days of employment or forfeit the right to join the System.

Waived time is not eligible for buy back. However, in FY 2015, members hired prior to July 1, 2010 were provided a one-time opportunity to purchase their eligible waived service if they declared their intent by March 31, 2015 and purchased their waived service on or before June 30, 2015.

Members hired prior to July 1, 2007 are vested after five years of membership. System members hired on or after July 1, 2007 are vested after ten years of creditable service.

MEMBER CONTRIBUTIONS

Contribution rates for System members were negotiated with all employee groups based on a percentage of their salary. As of fiscal year-end, contribution rates were as follows:

	Contribution Rate as a % of Covered Payroll				
Classification	Hired prior to July 1, 2007 (Range)	Hired from July 1, 2007 to June 30, 2011	Hired from July 1, 2011 to June 30, 2012	Hired from July 1, 2012 to June 30, 2014	Hired on or after July 1, 2014
Elected Officials	13.85%	13.85%	13.85%	13.85%	13.85%
Department Heads	10.00	10.50	10.50	10.50	10.50
General Employees	7.25	7.00	7.00	7.00	7.00
Correctional Officers	7.50	8.00	10.00	10.00	10.00
Deputy Sheriffs	7.50	8.00	10.00	10.00	10.00
Firefighters	9.50	9.50	10.00	10.00	10.00
Fire Supervisory, Mgmt. and Confidential (SMC)	10.00	10.00	10.00	10.00	10.00
Police Officers	9.50	9.50	9.50	9.50	10.00
Police Supervisory, Mgmt. and Confidential (SMC)	9.50	9.50	9.50	10.00*	10.00*

*Includes members who were appointed as Police SMC on or after July 1, 2012.
Interest is credited on member contributions at the rate of 5.0% per annum on the beginning of the fiscal year balance.

Summary of Plan Provisions, continued

MILITARY SERVICE CREDIT

Members hired prior to July 1, 2007, with five years of creditable service, or members hired on or after July 1, 2007, with ten years of creditable service are entitled to a military service credit on a year-for-year basis for up to a maximum of four years. No such service credit shall be granted to a member if the member has received credit for a period of military service under any other retirement system for which retirement benefits have been or will be received by the member. To apply, a member must bring their DD214 to the Retirement Office and complete an Application for Military Credit.

SICK LEAVE CREDIT

At the time of retirement, all members, except 911 employees on pay schedule 1-E, firefighters and Police SMC (Supervisory, Management and Confidential) receive one month of service credit for each 22 unused sick leave days. One additional month is granted if fractional days of sick leave total 11 or more. Firefighters, Police SMC and 911 employees (on pay schedule 1-E), receive one month of service credit for each 16 unused sick leave days. Sick leave may be used to determine service credit except for the following circumstances: death benefit, ordinary disability, and vesting.

RETIREMENT ALLOWANCE DATES

Normal Retirement for Service: Plan A (Members hired prior to July 1, 2007)
Normal retirement for service can be granted to general employees and appointed officials who have reached the age of 60 with 5 years of creditable service or attained 30 years of creditable service. A normal retirement for service can be granted to elected officials who have attained 16 years of creditable service or age 55 and attained 4 years of creditable service. An early service retirement can be granted to general employees who have reached the age of 55 and have attained 20 years of creditable service. A normal retirement for service can be granted to correctional officers and deputy sheriffs who have reached the age of 60 with 5 years of creditable service or have attained 20 years of creditable service. A normal retirement for service can be granted to firefighters at the age of 60 with 5 years of creditable service, age 50 with 20 years of creditable service, or 25 years creditable service regardless of age. A normal retirement for service can be granted to police officers who have reached the age of 55 or have attained 20 or more years of creditable service. The System does not have a mandatory retirement age requirement for general employees, deputy sheriffs and correctional officers. Firefighters and police officers must retire at age 65 unless approved for continuation of service by the Board annually.

Normal Retirement for Service: Plan B (Members hired on or after July 1, 2007)
Normal retirement for service can be granted to general employees and appointed officials who have reached the age of 67 with 10 years of creditable service or attained 35 years of creditable service. A normal retirement for service can be granted to elected officials who have attained 16 years of creditable service or age 55 and attained 4 years of creditable service. A normal retirement for service can be granted to correctional officers and deputy sheriffs who have reached the age of 67 with 10 years of creditable service or have attained 25 years of creditable service. A normal retirement for service can be granted to firefighters at the age of 60 with 10 years of creditable service or 30 years creditable service. A normal retirement for service can be granted to police officers who have reached the age of 60 with 10 years of creditable service or have attained 25 years of creditable service. The System does not have a mandatory retirement age requirement for general employees, deputy sheriffs and correctional officers. Firefighters and police officers must retire at age 65 unless approved for continuation of service by the Board on an annual basis.

Ordinary Disability Retirement may be granted to a member who can no longer perform their job due to a non-occupational related injury. A sworn police officer or firefighter, hired prior to July 1, 2007 must have five years of creditable service and be medically certified as incapacitated to continue performance of their duties. All other members must have 10 years of creditable service and be medically certified as incapacitated to continue performance of their duties.

Summary of Plan Provisions, continued

Accidental Disability Retirement may be granted to a member upon application who has been physically incapacitated for duty as a result of an occupational related injury. Accidental disabilities for all members are tiered based on the degree of disability (75%, 66.67%, or 50%) plus accumulated contributions.

Discontinued Service Retirement may be granted to a member whose employment has been discontinued through no fault of their own after completion of 25 years of creditable service or age 50 and 20 years of creditable service.

RETIREMENT ALLOWANCES

Retirement allowances are comprised of an annuity equal to the actuarial equivalent of the accumulated contributions plus a pension which together with the annuity shall provide a maximum allowance as provided for in the Code.

Normal Retirement for Service Allowance is granted as follows:

(A) General employees (excluding appointed officials, correctional officers and part-time employees) hired prior to July 1, 2007, with 30 years of creditable service, or age 65 with 5 years of creditable service receive an allowance equal to 1/55th of the Average Final Compensation (AFC) times the number of years of creditable service. General employees hired prior to July 1, 2007 may retire at age 60 with at least 5 years of creditable service, however, such members will be granted a blended benefit. For creditable service earned prior to July 1, 2007, members will receive an allowance equal to 1/55th of AFC times the number of years of creditable service and for creditable service earned on or after July 1, 2007, members will receive an allowance equal to 1/70th of AFC times the number of years of creditable service. The AFC definition is determined by the employee's classification as the highest 12 or 36 consecutive months.

General employees (excluding appointed officials and correctional officers) hired on or after July 1, 2007, receive an allowance equal to 1/70th of the Average Final Compensation (AFC) times the number of years of creditable service. The AFC definition for general employees hired on or after July 1, 2007 is the annual earnable compensation for the highest 36 consecutive months.

Part-time employees earn creditable service on a proportionate basis equal to the time worked annually as compared to the standard work year.

Appointed officials receive an allowance equal to 2.5% of their AFC times the number of years of creditable service.

(B) Elected officials receive an allowance equal to 5.0% of their AFC times the number of years of creditable service. Any Council member who becomes a member of the retirement system on or after February 1, 2010 may not receive a retirement allowance in excess of 60% of the member's AFC.

(C) Firefighters receive an allowance equal to 2.5% times the years of creditable service up to 20 years plus 2% of AFC for each year of creditable service in excess of 20 years, and 3% of AFC for each year of creditable service in excess of 30 years for years beginning on or after July 1, 2007. Firefighters with less than 20 years of creditable service receive an allowance equal to 2% of AFC times years of creditable service. The 3% rate does not apply to service earned prior to July 1, 2007. AFC is defined as the annual earnable compensation during the 12 consecutive calendar months affording the highest average.

(D) Police officers with 20 or more years of creditable service receive an allowance equal to 2.5% of AFC times years of creditable service up to 20 years plus 2% of AFC for each year of creditable service in excess of 20 years, and 3% of AFC for each year of creditable service in excess of 25 years for years beginning on or after July 1, 2007. The 3% rate does not apply to service earned prior to July 1, 2007. Police officers with less than 20 years of creditable service receive an allowance equal to 2% of AFC times years of creditable service. AFC is defined as the annual earnable compensation during the 12 consecutive calendar months affording the highest average.

Summary of Plan Provisions, continued

(E) Correctional officers and deputy sheriffs with 20 or more years of creditable service receive an allowance equal to 2.5% of AFC times years of creditable service up to 20 years plus 2% of AFC for each year of creditable service in excess of 20 years. Correctional officers and deputy sheriffs hired prior to July 1, 2007, with less than 20 years of creditable service receive the same benefit as a general employee. Correctional officers and deputy sheriffs hired on or after July 1, 2007, with 25 years of creditable service receive an allowance equal to 1.43% of AFC times the number of years of creditable service.

Ordinary Disability Retirement Allowance

(A) General employees, correctional officers and deputy sheriffs hired prior to July 1, 2007, receive an ordinary disability retirement allowance equal to 1.82% of AFC times the number of years of creditable service earned prior to July 1, 2007 and 1.43% for creditable service earned on or after July 1, 2007. General employees, correctional officers and deputy sheriffs hired on or after July 1, 2007, receive a retirement allowance equal to 1.43% of AFC times the number of years of creditable service. The minimum allowance is equal to 25% of AFC. The maximum allowance is equal to one-third of the members AFC. No member may receive a benefit in excess of that which they would have received at normal service retirement age. General employees, correctional officers and deputy sheriffs who are eligible for a normal service retirement and apply for an ordinary disability retirement may be required by the Board to accept a normal service retirement.

(B) Firefighters and police officers receive an ordinary disability retirement allowance equal to 2.5% of AFC times the number of years of creditable service not in excess of 20 years, and 2% of AFC times the number of years of creditable service in excess of 20 years. The minimum retirement allowance for firefighters and police officers for an ordinary disability retirement allowance shall equal 50% of AFC. No member may receive a benefit in excess of that which they would have received at normal service retirement age.

RETIREMENT ALLOWANCE OPTIONS

Members may select the maximum retirement allowance or one of seven optional survivorship allowances. The selection of an option, excluding *Option 7*, reduces the maximum allowance. The options are as follows:

Option 1. Allows the member's undistributed accumulated contributions to be paid to the beneficiary in a lump sum if the member's death occurs prior to the complete payout of all member contributions.

Option 2. Allows 100% of the member's retirement allowance to continue to be paid to the beneficiary after the member's death.

Option 3. Allows 50% of the member's retirement allowance to continue to be paid to the beneficiary after the member's death.

Option 4. Allows any portion of the retirement allowance to continue to be paid to the beneficiary after the member's death.

Option 5. Allows 100% of the member's reduced retirement allowance to be paid to the beneficiary after the member's death. If the member becomes divorced from the beneficiary or the beneficiary dies before the retiree, upon notification to the Board of Trustees, the member's allowance will be increased to the maximum allowance described above. If after such death or divorce, the member wishes to select a new beneficiary and retirement option, the member may select *options 2, 3, 4, 5 or 6*. The retirement allowance will then be recomputed.

Option 6. Allows 50% of the member's reduced retirement allowance to be paid to the beneficiary after the member's death. If the member becomes divorced from the beneficiary or the beneficiary dies before the retiree, upon notification to the Board of Trustees, the member's allowance will be increased to the maximum allowance described above. If after such death or divorce, the member wishes to select a new beneficiary and retirement option, the member may select *options 2, 3, 4, 5 or 6*. The retirement allowance will then be recomputed.

Summary of Plan Provisions, continued

RETIREMENT ALLOWANCE OPTIONS, continued

Option 7. Allows 50% of the member's retirement allowance to continue to be paid to the original beneficiary at no cost to the employee. This option is available to employees who have completed at least 25 years of actual service as a sworn Baltimore County Police Officer or 25 years of actual service as a sworn Baltimore County firefighter. If after such death or divorce, the member wishes to select a new beneficiary and retirement option, the member may select *options 2, 3, 4, 5 or 6*. The retirement allowance will then be recomputed.

DEFERRED RETIREMENT OPTION PLAN (DROP)

Police Officers and Firefighters DROP

The County has adopted a Back DROP for police officers with at least 27 years of service and firefighters with at least 32 years of service, under which eligible active members may elect to receive a lump sum payment with a 6% bonus at retirement in exchange for a reduced monthly benefit for life. Election to participate in the DROP will be made at retirement. The DROP participant benefit will be calculated along with all other available options, and the member will then choose between the DROP benefit and the regular pension benefits provided by the County. The DROP participant monthly pension will be determined as of a date that is 3, 3½, 4, 4½ or 5 years prior to retirement date based on the plan provisions, the member's salary and service at that earlier date. The lump sum payment will be based on the accumulation of member contributions, monthly pension payments, interest earned in the DROP at the greater of the rate of return on the actuarial value of assets minus 50 basis points or the regular rate of interest (currently 5%), and any retiree COLAs after at least twelve months in the DROP. This program became effective with retirements that occurred on or after July 1, 2004. Police officers and firefighters hired on or after July 1, 2007 are not eligible to participate in the DROP.

Correctional Officers and Deputy Sheriffs Deferred Retirement Option Plan (DROP)

Effective July 1, 2010, a Back-DROP is offered to eligible correctional officers and deputy sheriffs hired prior to July 1, 2007. The Back-DROP program allows eligible correctional officers and deputy sheriffs to elect to receive a lump sum payment at retirement in exchange for a reduced monthly benefit. The DROP period is 3, 3½, 4, 4½ or 5 years prior to retirement date based on the plan provisions, the member's salary and service at that earlier date. Eligibility is based on at least 27 years of service. The lump sum payment will be based on the accumulation of member contributions, monthly pension payments, interest earned in the DROP period at the regular rate of interest (currently 5%), and any retiree COLAs after at least twelve months in the DROP. Correctional officers and deputy sheriffs hired on or after July 1, 2007 are not eligible to participate in the DROP.

General Employees Deferred Retirement Option Plan (DROP)

Effective July 1, 2007, General employees hired prior to July 1, 2007, are offered a Forward DROP. The DROP allows eligible general employees to elect to receive a lump sum payment at retirement in exchange for a reduced monthly benefit. The DROP period is a minimum of 5 years and a maximum of 10 years. Eligibility is age 55 plus a total of age and service of at least 85. The DROP account will include benefit payments at the maximum option, employee contributions, interest earned in the DROP period at the regular rate of interest (currently 5%), plus any cost-of-living increase granted to retirees, provided the member has been in the DROP for at least 12 months and a one-time credit of unused sick time earned while in the DROP over the member's benefit basis times the member's average final compensation. This program is effective for retirements that occur on or after July 1, 2012. General employees hired on or after July 1, 2007 are not eligible to participate in the DROP.

Summary of Plan Provisions, continued

DEATH BENEFITS

Ordinary Death Benefit is granted as a result of a member's death from non-occupational causes as follows:

(A) A general employee's designated beneficiary or estate receives a lump sum payment of the member's contributions plus interest. Additionally, after five years of creditable service, the member's designated beneficiary or estate may receive a one-time payment equal to 100% of the member's annual earnable compensation. If the member was eligible for a service retirement or had 15 years of creditable service at the time of death, the surviving spouse or surviving minor children, if designated as the beneficiary, may receive a retirement allowance, in lieu of other benefit payments, based on service years equivalent to *Option 2*.

(B) A firefighter's or police officer's designated beneficiary or estate receives a lump sum payment consisting of the member's accumulated contributions plus interest. Additionally, after one year of creditable service, the member's designated beneficiary or estate may receive a one-time payment equal to 100% of the member's annual earnable compensation. If the firefighter or police officer had two years of creditable service, a surviving dependent family member, if designated as the beneficiary, may receive an allowance equal to 25% of AFC in lieu of another benefit. If the firefighter or police officer had 15 years of creditable service or was eligible for a service retirement, the surviving spouse or surviving minor children, if designated as the beneficiary, may receive a retirement allowance in lieu of other benefit payments based on the service years equivalent to *Option 2*.

Accidental Death Benefit is granted as the result of death from an occupational related injury as follows:

(A) The dependent beneficiary of a general employee may receive an allowance equal to $66^2/_3$% of AFC plus the annuity.

(B) The dependent beneficiary of a firefighter or police officer may receive an allowance equal to 100% of the annual earnable compensation at the time of death plus the annuity.

TERMINATION BENEFITS

Employees hired prior to July 1, 2007, with 5 or more years of membership service have the option of requesting a refund of their contributions and interest or remain in the System. If such member terminates employment or dies in service, with less than 5 years creditable service, the employee contributions plus interest are refundable to the former member or a designated beneficiary.

Employees hired on or after July 1, 2007, with 10 or more years of creditable service have the option of requesting a refund of their contributions and interest or remain in the System. If such member terminates employment or dies in service, with less than 10 years creditable service, the employee contributions plus interest are refundable to the former member or a designated beneficiary.

POST-RETIREMENT ALLOWANCE INCREASES

Retirement allowance increases can be granted each July 1 if sufficient investment income has accumulated in the Post-Retirement Increase Fund balance account. Increases will be granted in an amount equal to the Consumer Price Index - All Urban Consumers (CPI-U) increase for the previous calendar year. The increase cannot exceed 3%. If there are insufficient funds in the Post-Retirement Increase Fund balance account to finance the full CPI increase, the allowance will be increased to the nearest ¼% for which there are sufficient moneys. If there are insufficient funds to finance a one percent increase, no retirement allowance increase shall be granted. Effective July 1, 2010 the following changes regarding COLAs were implemented:

- Active members hired prior to July 1, 2007 must have at least 20 years of creditable service to be eligible for post-retirement COLAs.

Summary of Plan Provisions, continued

- Active members hired on or after July 1, 2007 must have at least twenty five (25) years of creditable service to be eligible for post- retirement COLAs.

- The cap on post-retirement COLAs is 3% for all members.

- The maximum account balance in the PRIF is 2 times the cost of a 3% COLA for all members.

- For active members who do not select the Deferred Retirement Option Program (DROP), the eligibility period to receive post-retirement COLAs is a minimum of 60 months.

- For active members who select the DROP program, the eligibility period to receive COLAs in the DROP is a minimum of 12 months. Once the member actually retires, the eligibility period for a post-retirement COLA is a minimum of 48 months.

Changes to Plan Provisions

LEGISLATIVE AND ADMINISTRATIVE CHANGES

On November 18, 2018, the County Council approved Bill No. 78-18 related to "Benefit Determination Issues". Retroactive to June 30, 2018, for 911 employees on Pay Schedule I-E, at the time of retirement shall receive membership service for unused sick leave in accordance with the formula that sixteen (16) days of unused sick leave are equal to one (1) month of membership service. One (1) additional month of membership service shall be granted if fractional days totaling eight (8) or more result from the application of this formula.

STATISTICAL SECTION

STATISTICAL SECTION

The purpose of the Statistical Section is to provide financial statement users with a historical perspective, context and detail to assist the reader to better understand and assess the System's overall economic condition. The data presented is intended to provide users with a broader and more complete understanding of the System than is possible from the information presented in the Financial Section alone.

The schedules within the Statistical Section are classified into the following categories.

Financial Trends

The schedules on Pages 96 and 97 show financial trend information to help the reader understand how the System's financial position has changed over the last 10 years. The schedules presented are:

- Schedule of Changes in Fiduciary Net Position
- Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type

Other Information

The schedules beginning on Page 99 provide information to assist the reader to understand the retired member characteristics and the participating employer composition of the System. The schedules presented are:

- Retirees and Beneficiaries - Distribution to Members by Type of Retirement
- Retirees and Beneficiaries - Distribution to Members by Option Selected
- Schedule of Average Benefit Payments
- Schedule of Participating Employers

Schedule of Changes in Fiduciary Net Position – The System
For the Ten Years Ended June 30
(Expressed in thousands)

	ADDITIONS				DEDUCTIONS				
Fiscal Year	Member Contributions	Employer Contributions	Total Net Investment Income	Total Additions to Fiduciary Net Position	Benefit Payments	Refunds of Contribution	Administrative Expenses	Total Deductions from Fiduciary Net Position	Changes in Net Position
2010	$33,236	$57,976	$254,805	$346,017	$150,704	$2,235	$1,099	$154,038	$191,979
2011	36,567	58,340	372,715	467,622	164,655	2,726	2,541	169,922	297,700
2012	39,481	65,127	23,321	127,929	209,673	3,640	2,329	215,642	(87,713)
2013	37,682	328,362	198,892	564,936	232,410	3,110	2,294	237,814	327,122
2014	37,844	80,454	327,264	445,562	225,668	3,166	1,342	230,176	215,386
2015	39,725	108,191	23,027	170,943	244,314	3,540	1,682	249,536	(78,593)
2016	40,812	105,742	(26,404)	120,150	249,016	4,143	1,647	254,806	(134,656)
2017	43,244	268,156	330,745	642,145	272,659	5,128	2,393	280,180	361,965
2018	45,697	128,896	212,476	387,069	280,832	4,798	1,272	286,902	100,167
2019	48,198	138,200	112,089	298,487	283,317	7,786	1,125	292,228	6,259

Schedule of Changes in Fiduciary Net Position – Plan A
For the Ten Years Ended June 30*
(Expressed in thousands)

	ADDITIONS				DEDUCTIONS				
Fiscal Year	Member Contributions	Employer Contributions	Total Net Investment Income	Total Additions to Fiduciary Net Position	Benefit Payments	Refunds of Contribution	Administrative Expenses	Total Deductions from Fiduciary Net Position	Changes in Net Position
2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2012	$33,741	$64,887	$23,169	$121,797	$209,673	$2,967	$2,320	$214,960	$(93,163)
2013	30,643	327,894	197,341	555,878	232,410	2,085	2,278	236,773	319,105
2014	29,860	80,127	323,620	433,607	225,668	1,770	1,326	228,764	204,843
2015	29,463	106,912	22,648	159,023	244,314	1,760	1,651	247,725	(88,702)
2016	28,491	104,306	(25,912)	106,885	248,972	1,543	1,608	252,123	(145,238)
2017	28,445	265,277	321,773	615,495	272,576	2,402	2,350	277,328	338,167
2018	28,504	123,028	206,107	357,639	280,704	1,539	1,223	283,466	74,173
2019	28,564	131,510	106,590	266,664	283,043	2,459	1,071	286,573	(19,909)

*Data prior to FY 2012 was not segregated by Plan, therefore, ten-year data is being compiled beginning in FY 2012.

Schedule of Changes in Fiduciary Net Position – Plan B
For the Ten Years Ended June 30*
(Expressed in thousands)

Fiscal Year	ADDITIONS: Member Contributions	ADDITIONS: Employer Contributions	ADDITIONS: Total Net Investment Income	ADDITIONS: Total Additions to Fiduciary Net Position	DEDUCTIONS: Benefit Payments	DEDUCTIONS: Refunds of Contribution	DEDUCTIONS: Administrative Expenses	DEDUCTIONS: Total Deductions from Fiduciary Net Position	Changes in Net Position
2010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2012	$5,740	$240	$152	$6,132	-	$673	$9	$682	$5,450
2013	7,039	468	1,551	9,058	-	1,025	16	1,041	8,017
2014	7,984	327	3,644	11,955	-	1,396	16	1,412	10,543
2015	10,262	1,279	379	11,920	-	1,780	31	1,811	10,109
2016	12,321	1,436	(492)	13,265	$44	2,600	39	2,683	10,582
2017	14,799	2,879	8,972	26,650	83	2,726	43	2,852	23,798
2018	17,193	5,868	6,369	29,430	128	3,259	49	3,436	25,994
2019	19,634	6,690	5,499	31,823	274	5,327	54	5,655	26,168

*Data prior to FY 2012 was not segregated by Plan, therefore, ten-year data is being compiled beginning in FY 2012.

Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type –The System
For the Ten Years Ended June 30
(Expressed in thousands)

Year Ending June 30	Age & Service Benefits: Retirees	Age & Service Benefits: Beneficiaries	Disability Benefits: Retirees: Occupational	Disability Benefits: Retirees: Non-Occupational	Disability Benefits: Beneficiaries	Death Benefits	Total Benefits	Refunds: Separation	Refunds: Death*	Total Refunds
2010	$120,063	$7,395	$16,857	$5,625	$579	$185	$150,704	$2,043	$192	$2,235
2011	132,008	8,561	17,077	5,870	634	505	164,655	1,892	834	2,726
2012	177,075	8,823	16,933	5,821	691	330	209,673	3,030	610	3,640
2013	199,754	9,130	16,671	5,824	709	292	232,410	2,823	287	3,110
2014	195,613	4,820	16,453	5,881	765	2,136	225,668	2,861	305	3,166
2015	211,893	7,030	16,205	5,780	1,133	2,273	244,314	3,458	82	3,540
2016	219,035	5,933	15,247	5,578	874	2,349	249,016	3,964	179	4,143
2017	242,309	6,624	14,775	5,437	935	2,579	272,659	4,324	804	5,128
2018	249,856	7,351	14,509	5,421	907	2,788	280,832	4,515	283	4,798
2019	251,024	8,217	14,520	5,492	835	3,229	283,317	7,465	321	7,786

Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type – Plan A
For the Ten Years Ended June 30
(Expressed in thousands)

Year Ending June 30	Age & Service Benefits		Disability Benefits					Refunds*		
			Retirees							
	Retirees	Beneficiaries	Occupational	Non-Occupational	Beneficiaries	Death Benefits	Total Benefits	Separation	Death	Total Refunds*
2010	$120,063	$7,395	$16,857	$5,625	$579	$185	$150,704	N/A	N/A	N/A
2011	132,008	8,561	17,077	5,870	634	505	164,655	N/A	N/A	N/A
2012	177,075	8,823	16,933	5,821	691	330	209,673	N/A	N/A	N/A
2013	199,754	9,130	16,671	5,824	709	292	232,410	$1,798	$287	$2.085
2014	195,613	4,820	16,453	5,881	765	2,136	225,668	1,409	360	1,769
2015	211,893	7,030	16,205	5,780	1,133	2,273	244,314	1,685	75	1,760
2016	218,991	5,933	15,247	5,578	874	2,349	248,972	1,396	147	1,543
2017	242,226	6,624	14,775	5,437	935	2,579	272,576	1,598	804	2,402
2018	249,728	7,351	14,509	5,421	907	2,788	280,704	1297	242	1,539
2019	250,843	8,217	14,515	5,492	835	3,141	283,043	2,183	276	2,459

*Data for Refunds prior to FY 2013 was not segregated by Plan, therefore, ten-year data is being compiled beginning in FY 2013.

Schedule of Benefit and Refund Deductions from Fiduciary Net Position by Type – Plan B
For the Ten Years Ended June 30
(Expressed in thousands)

Year Ending June 30	Age & Service Benefits		Disability Benefits					Refunds*		
			Retirees							
	Retirees	Beneficiaries	Occupational	Non-Occupational	Beneficiaries	Death Benefits	Total Benefits	Separation	Death	Total Refunds*
2010	-	-	-	-	-	-	-	N/A	N/A	N/A
2011	-	-	-	-	-	-	-	N/A	N/A	N/A
2012	-	-	-	-	-	-	-	N/A	N/A	N/A
2013	-	-	-	-	-	-	-	$1,025	-	$1,025
2014	-	-	-	-	-	-	-	1,343	$54	1,397
2015	-	-	-	-	-	-	-	1,774	6	1,780
2016	$44	-	-	-	-	-	$44	2,568	32	2,600
2017	83	-	-	-	-	-	83	2,726	-	2,726
2018	128	-	-	-	-	-	128	3,218	41	3,259
2019	181	-	5	-	-	88	274	5,282	45	5,327

*Data for Refunds prior to FY 2013 was not segregated by Plan, therefore, ten-year data is being compiled beginning in FY 2013.

Retirees and Beneficiaries - Distribution of Members by Type of Retirement
The System
Fiscal Year Ended June 30, 2019

Amount of Monthly Benefit	Number of Retirees	Type of Retirement			
		Service Retiree	Accidental Disability	Ordinary Disability	Beneficiary
Under $300	413	329	4	0	80
$300 - $599	747	568	42	3	134
$600 - $899	741	547	90	1	103
$900 - $1,199	615	482	66	3	64
$1,200 - $1,499	533	383	46	16	88
$1,500 - $1,799	525	401	41	26	57
$1,800 - $2,099	541	407	40	47	47
$2,100 - $2,399	542	436	11	68	27
$2,400 - $2,699	559	456	9	69	25
$2,700 - $2,999	443	359	5	66	13
$3,000 and over	2,541	2,329	8	141	63
Totals	8,200	6,697	362	440	701

Retirees and Beneficiaries - Distribution of Members by Type of Retirement
Plan A
Fiscal Year Ended June 30, 2019

Amount of Monthly Benefit	Number of Retirees	Type of Retirement			
		Service Retiree	Accidental Disability	Ordinary Disability	Beneficiary
Under $300	413	329	4	0	80
$300 - $599	743	564	42	3	134
$600 - $899	736	543	90	0	103
$900 - $1,199	615	482	66	3	64
$1,200 - $1,499	532	383	46	16	87
$1,500 - $1,799	524	400	41	26	57
$1,800 - $2,099	541	407	40	47	47
$2,100 - $2,399	541	435	11	68	27
$2,400 - $2,699	558	455	9	69	25
$2,700 - $2,999	443	359	5	66	13
$3,000 and over	2,539	2,328	8	141	62
Totals	8,185	6,685	362	439	699

Retirees and Beneficiaries - Distribution of Members by Type of Retirement, continued
Plan B
Fiscal Year Ended June 30, 2019

Amount of Monthly Benefit	Number of Retirees	Type of Retirement			
		Service Retiree	Accidental Disability	Ordinary Disability	Beneficiary
Under $300	0	0	0	0	0
$300 - $599	4	4	0	0	0
$600 - $899	5	4	0	1	0
$900 - $1,199	0	0	0	0	0
$1,200 - $1,499	1	0	0	0	1
$1,500 - $1,799	1	1	0	0	0
$1,800 - $2,099	0	0	0	0	0
$2,100 - $2,399	1	1	0	0	0
$2,400 - $2,699	1	1	0	0	0
$2,700 - $2,999	0	0	0	0	0
$3,000 and over	2	1	0	0	1
Totals	15	12	0	1	2

Retirees and Beneficiaries - Distribution to Members by Option Selected
The System
Fiscal Year Ended June 30, 2019

Amount of Monthly Benefit	Number of Retirees	Option Selected*							
		M	1	2	3	4	5	6	7
Under $300	413	209	131	18	6	0	32	17	0
$300 - $599	747	323	264	44	18	0	59	39	0
$600 - $899	741	360	246	27	27	0	44	37	0
$900 - $1,199	615	254	207	33	21	3	51	46	0
$1,200 - $1,499	533	237	148	32	20	4	36	56	0
$1,500 - $1,799	525	236	128	26	21	8	49	57	0
$1,800 - $2,099	541	230	145	25	23	8	48	61	1
$2,100 - $2,399	542	217	136	28	17	17	65	61	1
$2,400 - $2,699	559	247	115	38	19	20	46	73	1
$2,700 - $2,999	443	186	81	21	13	21	46	75	0
$3,000 and over	2,541	666	377	82	71	149	105	205	886
Totals	8,200	3,165	1,978	374	256	230	581	727	889

Retirees and Beneficiaries - Distribution to Members by Option Selected
Plan A
Fiscal Year Ended June 30, 2019

Amount of Monthly Benefit	Number of Retirees	Option Selected*							
		M	1	2	3	4	5	6	7
Under $300	413	209	131	18	6	0	32	17	0
$300 - $599	743	321	263	43	18	0	59	39	0
$600 - $899	736	358	244	27	27	0	43	37	0
$900 - $1,199	615	254	207	33	21	3	51	46	0
$1,200 - $1,499	532	236	148	32	20	4	36	56	0
$1,500 - $1,799	524	236	128	25	21	8	49	57	0
$1,800 - $2,099	541	230	145	25	23	8	48	61	1
$2,100 - $2,399	541	216	136	28	17	17	65	61	1
$2,400 - $2,699	558	247	115	38	18	20	46	73	1
$2,700 - $2,999	443	186	81	21	13	21	46	75	0
$3,000 and over	2,539	664	377	82	71	149	105	205	886
Totals	8,185	3,157	1,975	372	255	230	580	727	889

Retirees and Beneficiaries - Distribution to Members by Option Selected, continued
Plan B
Fiscal Year Ended June 30, 2019

Amount of Monthly Benefit	Number of Retirees	Option Selected*							
		M	1	2	3	4	5	6	7
Under $300	0	0	0	0	0	0	0	0	0
$300 - $599	4	2	1	1	0	0	0	0	0
$600 - $899	5	2	2	0	0	0	1	0	0
$900 - $1,199	0	0	0	0	0	0	0	0	0
$1,200 - $1,499	1	1	0	0	0	0	0	0	0
$1,500 - $1,799	1	0	0	1	0	0	0	0	0
$1,800 - $2,099	0	0	0	0	0	0	0	0	0
$2,100 - $2,399	1	1	0	0	0	0	0	0	0
$2,400 - $2,699	1	0	0	0	1	0	0	0	0
$2,700 - $2,999	0	0	0	0	0	0	0	0	0
$3,000 and over	2	2	0	0	0	0	0	0	0
Totals	15	8	3	2	1	0	1	0	0

***Option Selected:**

M = Maximum. At member's death, all payments cease. Surviving beneficiary will receive pro-rated payment for number of days in final month.

Option 1. Guarantees the return of the member's accumulated contributions and interest less the member's accumulated reserves already paid.

Option 2. Guarantees 100% of the member’s payment to the designated beneficiary for their lifetime.

Option 3. Guarantees 50% of the member’s payment to the designated beneficiary for their lifetime.

Option 4. Guarantees an alternative specified % of the member’s payment to the designated beneficiary for their lifetime.

Option 5. Guarantees 100% payment to beneficiary, unless beneficiary divorces or predeceases member. Allowance then pops-up to maximum.

Option 6. Guarantees 50% payment to beneficiary, unless beneficiary divorces or predeceases member. Allowance then pops-up to maximum.

Option 7. Guarantees 50% of the member's payment to the designated beneficiary for their lifetime, at no cost. (*Option 7* is applicable to police and firefighters only with 25 years of creditable service). Allowed to change beneficiary if beneficiary divorces or predeceases member.

Schedule of Average Benefit Payments
The System
For the Six Years Ended June 30

	Years Creditable Service					
Retirement Effective Dates	0-10	10-15	15-20	20-25	25-30	30+
July 1, 2013 to June 30, 2014						
Average Monthly Benefit	$366	$699	$1,093	$2,536	$4,052	$4,492
Average - Average Final Compensation	$38,429	$40,925	$45,803	$65,611	$83,499	$81,609
Number of Active Retirees	26	43	24	44	57	90
July 1, 2014 to June 30, 2015						
Average Monthly Benefit	$476	$715	$1,380	$1,965	$3,705	$4,908
Average - Average Final Compensation	$41,179	$41,254	$53,079	$57,092	$76,844	$88,462
Number of Active Retirees	42	45	31	36	50	111
July 1, 2015 to June 30, 2016						
Average Monthly Benefit	$418	$798	$1,010	$2,168	$3,737	$4,545
Average - Average Final Compensation	$38,690	$47,438	$47,460	$63,986	$79,521	$84,996
Number of Active Retirees	29	42	44	36	70	129
July 1, 2016 to June 30, 2017						
Average Monthly Benefit	$357	$761	$1,259	$2,395	$3,903	$4,319
Average - Average Final Compensation	$36,402	$45,476	$52,108	$68,923	$83,332	$84,659
Number of Active Retirees	17	55	43	46	77	136
July 1, 2017 to June 30, 2018						
Average Monthly Benefit	$476	$771	$1,230	$2,454	$3,809	$5,069
Average - Average Final Compensation	$41,548	$47,077	$50,691	$66,939	$82,017	$98,205
Number of Active Retirees	25	42	51	45	58	130
July 1, 2018 to June 30, 2019						
Average Monthly Benefit	$1,012	$1,091	$1,282	$2,647	$4,157	$5,201
Average - Average Final Compensation	$48,867	$57,563	$55,057	$72,154	$86,994	$96,970
Number of Active Retirees	23	44	34	53	43	119

Schedule of Average Benefit Payments
Plan A
For the Six Years Ended June 30

	Years Creditable Service					
Retirement Effective Dates	0-10	10-15	15-20	20-25	25-30	30+
July 1, 2013 to June 30, 2014						
Average Monthly Benefit	$366	$699	$1,093	$2,536	$4,052	$4,492
Average - Average Final Compensation	$38,429	$40,925	$45,803	$65,611	$83,499	$81,609
Number of Active Retirees	26	43	24	44	57	90
July 1, 2014 to June 30, 2015						
Average Monthly Benefit	$476	$715	$1,380	$1,965	$3,705	$4,908
Average - Average Final Compensation	$41,179	$41,254	$53,079	$57,092	$76,844	$88,462
Number of Active Retirees	42	45	31	36	50	111
July 1, 2015 to June 30, 2016						
Average Monthly Benefit	$418	$798	$1,010	$2,207	$3,703	$4,545
Average - Average Final Compensation	$38,690	$47,438	$47,460	$64,624	$78,972	$84,996
Number of Active Retirees	29	42	44	35	69	129
July 1, 2016 to June 30, 2017						
Average Monthly Benefit	$357	$761	$1,259	$2,395	$3,903	$4,319
Average - Average Final Compensation	$36,402	$45,476	$52,108	$68,923	$83,332	$84,659
Number of Active Retirees	17	55	43	46	77	136
July 1, 2017 to June 30, 2018						
Average Monthly Benefit	$476	$796	$1,262	$2,444	$3,809	$5,069
Average - Average Final Compensation	$41,548	$47,891	$51,055	$66,877	$82,017	$98,205
Number of Active Retirees	25	39	52	44	58	130
July 1, 2018 to June 30, 2019						
Average Monthly Benefit	$966	$1,142	$1,282	$2,647	$4,157	$5,201
Average - Average Final Compensation	$49,397	$56,328	$55,057	$71,354	$86,994	$96,970
Number of Active Retirees	21	38	34	52	43	119

Schedule of Average Benefit Payments
Plan B
For the Six Years Ended June 30

	Years Creditable Service					
Retirement Effective Dates	0-10	10-15	15-20	20-25	25-30	30+
July 1, 2015 to June 30, 2016						
Average Monthly Benefit	$0	$0	$0	$805	$6,105	$0
Average - Average Final Compensation	$0	$0	$0	$41,659	$117,414	$0
Number of Active Retirees	0	0	0	1	1	0
July 1, 2016 to June 30, 2017						
Average Monthly Benefit	$0	$0	$0	$0	$0	$0
Average - Average Final Compensation	$0	$0	$0	$0	$0	$0
Number of Active Retirees	0	0	0	0	0	0
July 1, 2017 to June 30, 2018						
Average Monthly Benefit	$0	$445	$0	$0	$0	$0
Average - Average Final Compensation	$0	$36,502	$0	$0	$0	$0
Number of Active Retirees	0	3	0	0	0	0
July 1, 2018 to June 30, 2019						
Average Monthly Benefit	$1,489	$1,036	$0	$2,639	$0	$0
Average - Average Final Compensation	$43,302	$72,297	$0	$113,762	$0	$0
Number of Active Retirees	2	6	0	1	0	0

*Prior to FY2016, there were no Plan B retirees.

Schedule of Participating Employers
Current Year and Nine Years ago

	The System FY 2019			The System FY 2010		
Participating Government Employers	Covered Employees	Rank	Percentage of Total System	Covered Employees	Rank	Percentage of Total System
Baltimore County, Maryland	6,884	1	70.90%	7,048	1	73.17%
Certain employees of:						
Board of Education	2,596	2	26.74%	2,350	2	24.40%
Community College	149	3	1.53%	138	3	1.43%
Revenue Authority	48	4	0.49%	57	4	0.59%
Board of Library Trustees	33	5	0.34%	40	5	0.42%
Total	9,710		100.00%	9,633		100.00%

	Plan A FY 2019			Plan A FY 2010		
Participating Government Employers	Covered Employees	Rank	Percentage of Total System	Covered Employees	Rank	Percentage of Total System
Baltimore County, Maryland	3,453	1	35.56%	6,134	1	63.68%
Certain employees of:						
Board of Education	915	2	9.42%	1,966	2	20.41%
Community College	40	3	0.41%	124	3	1.29%
Revenue Authority	21	4	0.22%	46	4	0.48%
Board of Library Trustees	14	5	0.14%	33	5	0.34%
Total	4,443		45.76%	8,303		86.19%

	Plan B FY 2019			Plan B FY 2010		
Participating Government Employers	Covered Employees	Rank	Percentage of Total System	Covered Employees	Rank	Percentage of Total System
Baltimore County, Maryland	3,431	1	35.33%	914	1	9.49%
Certain employees of:						
Board of Education	1,681	2	17.31%	384	2	3.99%
Community College	109	3	1.12%	14	3	0.15%
Revenue Authority	27	4	0.28%	11	4	0.11%
Board of Library Trustees	19	5	0.20%	7	5	0.07%
Total	5,267		54.24%	1,330		13.81%

Plan A closed to members hired after June 30, 2007. Plan B was created for members hired on or after July 1, 2007.