



**Anne Arundel County
Retirement and Pension System**

Comprehensive Annual Financial Report

Pension Trust Funds of Anne Arundel County, Maryland

For the Year Ended December 31, 2019

Anne Arundel County Retirement and Pension System

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For the Year Ended December 31, 2019

Prepared by:
The Anne Arundel County Office of Finance
44 Calvert Street
Annapolis MD 21401

**Anne Arundel County Retirement and Pension System
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For the Year Ended December 31, 2019

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Introductory Section



Dear Board of Trustees and Members of the
Anne Arundel County Retirement and Pension System:

I am pleased to present to you the Anne Arundel County Retirement and Pension System (the “System”) Comprehensive Annual Financial Report for the year ended December 31, 2019. This financial report is a historical perspective of benefits, services, and fiscal activities of the System. The purpose of this report is to provide you, the retirement System participants and other interested parties, with sufficient information to evaluate the performance of the System during the plan year.

Plan History

County employees participate in four single-employer defined benefit pension plans (the “Plans”). The County Plans were established under authority created by County Charter and legislation. In December 1996, the County passed legislation creating the Anne Arundel County Retirement and Pension System, a corporation that is an agency in the executive branch of County government, effective February 1, 1997. At that date, all net assets of pension trust funds were transferred to the System. In 2004, the Board of Trustees of the System (the “Board”) adopted a formal statement of funding objectives, policy, and strategy. The Statement of Investment Policy and Objectives was designed to clearly communicate the directives of the Trustees of the System to all interested parties. This investment policy applies to the funds of the System on an aggregate basis. The Policy Statement sets forth how each fund manager shall be governed and details specific investment guidelines relating to each of the fund managers.

Major Initiatives

An Experience and Assumption Study was conducted by the actuary in 2018 to review the experience of the Plans during 2012 to 2016. The report recommended changes in assumptions due to their study of the demographic and economic experience of the Anne Arundel County Retirement Plans for the 2012 through 2016 plan years and their expectations for future experience. A gradual change in the discount rate (investment return) from 7.50% to 7.25% over the next five years was voted on. The Board decided to review and vote each April on the annual 5 basis point discount rate reduction. The rate is 7.45% for both 2019 and 2020.

Each year, the Board reviews the investment asset allocation and prospective returns for the various classes to attempt to construct a portfolio that will produce the desired rate of return. The resulting rebalancing of the portfolio generally requires moving funds among managers and can result in the elimination of a current manager or the hiring of a new investment manager. An asset allocation study conducted during the year resulted in a 3.0% reduction in risk parity and slight increases to fixed income and private equity. Due to asset growth during the year and the new target allocations, the Board of Trustees approved a rebalancing schedule that included assets coming out of risk parity and going into public equities, fixed income, and emerging market debt.

The Pension System Investment Policy was updated in 2019 to formally codify asset allocation changes approved by the Board during the August meeting.

A new 401(a) Employee Retirement Savings Plan (“Savings Plan”) was created by Bill No. 95-17. Effective July 1, 2018, any employee hired in any position eligible to participate in the Employees’ Retirement System shall have the election to choose the Employee Retirement Savings Plan instead of the Pension Plan. The employee contribution rate for the Savings Plan is 4.0% and there is an 8.0% employer contribution rate. An employee vests in the new plan in five years.

The Employee Pension Portal online system went live in the fall of 2018. The portal allows employees to view their annual pension statement, calculate retirement estimates and use other retirement tools electronically, including the Deferred Retirement Option Program (DROP) calculation for employees eligible for the DROP.

Funding Status

The fiduciary net position as a percentage of the total pension liability increased for the Employees’ Retirement Plan, the Police Service Retirement Plan, the Fire Service Retirement Plan and the Detention Officers’ and Deputy Sheriffs’ Retirement Plan. The Employees Retirement Plan increased from 68.8% in 2018 to 70.9% in 2019. The Police Service Retirement Plan increased from 71.5% in 2018 to 76.6% in 2019. The Fire Service Retirement Plan increased from 78.2% in 2018 to 83.3% in 2019. The Detention Officers’ and Deputy Sheriffs’ Retirement Plan increased from 67.2% in 2018 to 72.7% in 2019.

Investment Performance

The average investment returns for the Employees’ Retirement Plan, the Police Service Retirement Plan, the Fire Service Retirement Plan, and the Detention Officers’ and Deputy Sheriffs’ Retirement Plan on a market value basis for the year ended December 31, 2019 were 14.8%. On an actuarial basis, the average investment returns for the Employees’ Retirement Plan, the Police Service Retirement Plan, the Fire Service Retirement Plan, and the Detention Officers’ and Deputy Sheriffs’ Retirement Plan were 14.8%, 14.9%, 15.0%, and 14.8%, respectively. The actuarial value of assets is calculated by spreading the market-value investment gains or losses in excess of (or below) the assumed rate of return over a five-year period. The asset-smoothing method was changed with the 2011 valuation.

System Organization and Management

The Board of Trustees is responsible for reviewing the investment program, approving policies, objectives, and guidelines and reviewing the financial performance of the System in relation to expectations. The Board also appoints the investment committee to make specific recommendations as to asset allocation and investment strategies. The investment committee works with an investment consultant, currently New England Pension Consultants (NEPC). The investment consultant assists the Board and the investment committee in developing and modifying policy objectives and guidelines, including the development of a liability driven asset allocation strategy. The investment consultant makes recommendations on the appropriate mix of investment manager styles and strategies and acts as fiduciary to the fund. The Board has final approval for all manager selections and policy changes.

The Board also selects the custodial bank, currently State Street Bank & Trust, that has custody of and is the bank of record for the Plans' investments, the actuary for the Plans, Bolton Partners, Inc., and the independent auditors, CliftonLarsonAllen, LLP. The Secretary of the Board of Trustees is responsible for daily administrative decisions and the Anne Arundel County Office of Personnel and the Office of Finance carry out these administrative actions, including transmittal of contributions and funding the payment of benefits and other administrative expenses. Additional details regarding investment professionals who provide services to the System are included in the Investment Section later in this report.

Financial Management

The financial statements and supplemental information and schedules included in this report are the responsibility of System management and have been prepared in accordance with accounting principles generally accepted in the United States of America for governmental accounting and reporting as pronounced and adopted by the Governmental Accounting Standards Board. I advise you to read the Management Discussion and Analysis, Basic Financial Statements, and Notes to the Basic Financial Statements to gain a better understanding of the results of the System during 2019.

Independent Audit

The System is audited annually. CliftonLarsonAllen, LLP, an independent firm of Certified Public Accountants, conducted the audit for the year ended December 31, 2019. Refer to Independent Auditors' Report for the audit opinion.

Internal Accounting Control

Management is responsible for maintaining a system of adequate internal controls designed to provide reasonable assurance that transactions are executed in accordance with management's general or specific authorization, and are recorded as needed to maintain accountability for assets and to permit preparation of the combining financial statements. We believe the internal controls in effect during the year ended December 31, 2019 adequately safeguard the assets and provide reasonable assurance regarding the proper recording of financial transactions.

Acknowledgments

Staff in Anne Arundel County's Office of Finance prepared this Comprehensive Annual Financial Report of the Retirement and Pension System. The report is intended to provide complete and reliable information as a basis for making management decisions, determining compliance with legal provisions, and to provide a means of determining responsible stewardship for the assets contributed by the members and their employers. This report is being sent to the Board of Trustees and other interested parties.

Respectfully,

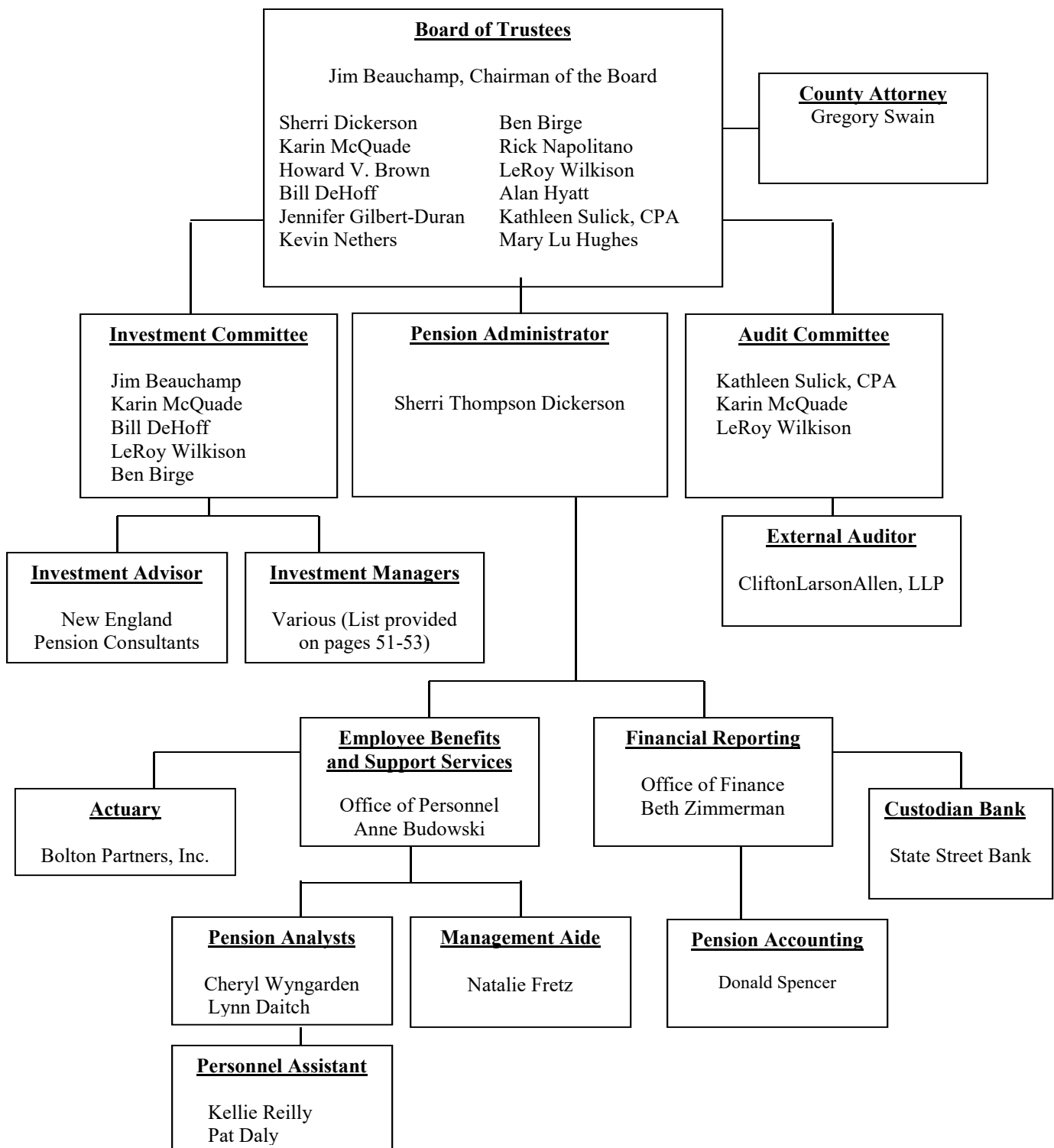


Karin McQuade
Controller

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Anne Arundel County Retirement and Pension System

Organizational Chart



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Financial Section



INDEPENDENT AUDITORS' REPORT

Board of Trustees
Anne Arundel County Retirement and Pension System
Annapolis, Maryland

Report on the Financial Statements

We have audited the accompanying financial statements of Anne Arundel County Retirement and Pension System (the System), a pension trust fund of Anne Arundel County, Maryland, which comprise the combining statement of fiduciary net position as of December 31, 2019 and the related combining statement of changes in fiduciary net position for the year then ended, and the related notes to the financial statements, as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit 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 System'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 System'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 fiduciary net position of the System as of December 31, 2019, and the respective changes in its fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Report on Summarized Comparative Information

We have previously audited the System's 2018 financial statements, and we expressed an unmodified audit opinion on those audited financial statements in our report dated June 14, 2019. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31, 2018 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, the schedules of changes in net pension liability and related ratios by plan, investment returns, and employer contributions by plan, and notes to required supplementary information, as listed in the table of contents, be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the 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 financial statements, and other knowledge we obtained during our audit of the 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 an opinion on the System's financial statements. The supplementary schedules, including the schedules of administrative expenses, investment expenses, and payments to consultants and the 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 financial statements.

The supplementary schedules, as listed in the table of contents, are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the financial statements. Such information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary schedules, including the schedules of administrative expenses, investment expenses, and payments to consultants, as listed in the table of contents, are fairly stated, in all material respects, in relation to the financial statements as a whole.

The information in the introductory, investment, actuarial and statistical sections, as listed in the table of contents, have not been subjected to the auditing procedures applied in the audit of the 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 July 20, 2020 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

Introduction

To introduce readers of the financial report of the Anne Arundel County Retirement and Pension System (System), the Office of Finance is pleased to provide this discussion and analysis of financial activities for the year ended December 31, 2019. Please read it in conjunction with the rest of the report, which consists of the basic financial statements, including the notes thereto, required supplementary information (RSI), and supplementary schedules. Combined amounts from the year ended December 31, 2018 have been provided herein to enhance comparability.

The System has the fiduciary responsibility to administer four single-employer defined benefit pension plans for certain Anne Arundel County (County) employees: the Employees' Retirement Plan, the Police Service Retirement Plan, the Fire Service Retirement Plan and the Detention Officers' and Deputy Sheriffs' Retirement Plan (the "Plans").

Financial Highlights

The System's total fiduciary net position increased \$224.5 million in calendar year 2019, bringing net position to \$2.0 billion. Contributions increased 7.5% to \$92.2 million versus \$85.8 million in 2018. Of this total, employer contributions of \$78.0 million were approximately 8.3% higher than as of 2018 at \$72.0 million. Participant contributions increased by \$0.4 million or approximately 2.9% to \$14.2 million. The 2019 time weighted total rate of return of 14.8% compares to a loss of 4.7% for 2018.

The System paid \$130.6 million in benefits in 2019, compared with \$126.2 million paid in 2018, an increase of 3.4%. The 2019 Cost of Living Adjustment (COLA) for beneficiaries ranged from 1.1% for retirees since 1997 and 1.9% to 2.3% for substantially all retired prior to 1997. The number of benefit recipients increased to 3,730, a 2.9% increase over the prior year.

Employees' Retirement Plan – In 2019, net position increased \$71.0 million or 11.4% to \$691.2 million driven primarily by investment gains of \$91.4 million compared with \$31.4 million loss in 2018. Benefit payments of \$55.0 million outpaced contributions of \$35.1 million by \$19.9 million and various administrative expenses were \$618.6 thousand.

Police Service Retirement Plan – In 2019, net position increased \$66.2 million or 12.8% to \$582.5 million. The Plan's benefit payments of \$36.9 million were \$10.1 million greater than contributions of \$26.8 million. Investment gains of \$76.8 million in 2019 compared to losses of \$26.0 million in 2018. Administrative expenses were \$540.1 thousand.

Fire Service Retirement Plan – In 2019, net position increased by \$66.8 million or 13.1% to \$576.6 million. Investment gains in 2019 were \$76.1 million compared with losses of \$25.3 million in 2018. Contributions of \$21.3 million were 70.8% of the benefit payments of \$30.1 million. Various administrative expenses were \$530.5 thousand.

Detention Officers' and Deputy Sheriffs' Retirement Plan – In 2019, net position increased by \$20.4 million or 15.2% to \$155.3 million. Contributions were \$9.0 million compared with benefit payments of \$8.6 million. Investment gains of \$20.1 million in 2019 compared to losses of \$6.9 million in 2018.

Overview of the Basic Financial Statements

In this financial report, the basic financial statements consist of the Combining Statement of Fiduciary Net Position and the Combining Statement of Changes in Fiduciary Net Position with accompanying Notes. The financial statements present information in separate columns for each of the four single-employer defined benefit pension plans as of and for the year ended December 31, 2019 with combined comparative information as of and for the year ended December 31, 2018. The Combined Statement of Fiduciary Net Position presents the financial position of the Plans. The financial position is comprised of assets, which primarily consist of investments less liabilities, including accounts payable, investment commitments payable, and the obligation for collateral related to the securities lending program. The obligation from the securities lending program is offset by collateral held. The difference between assets and liabilities is net position, which represents the amount of resources available to pay future benefits to retirees and their beneficiaries.

Investments net of cash consist of domestic and foreign debt obligations, domestic and foreign equities, real estate, insurance company contracts, absolute return funds, and private markets. The System has a securities lending program to enhance its investment return. The assets and liabilities arising from the program are closely matched, netting to no additional material Plan liability. In accordance with generally accepted accounting principles, the liability for future benefit payments is not reported in these financial statements. Refer to Note 4 for the Schedule of Net Pension Liability of the System by Plan which presents an estimate of the liabilities.

The Combining Statement of Changes in Fiduciary Net Position presents the additions to and deductions from the four Plans' net positions during the year. Each Plan receives contributions from participants and the County, as well as income or losses from investments and related activity. The primary deductions are the payment of benefits, which are the Plans' primary objectives. Deductions also include refunds to members who leave the Plans as well as administrative expenses. Administrative expenses are allocated monthly to each Plan based on its relative percentage of the total investments.

Notes to the Basic Financial Statements

The Notes to the Basic Financial Statements are an integral part of the statements. These notes provide background and more detail about the information in the financial statements. Among other matters, the notes describe the System's purpose and its membership; the significant accounting policies used to prepare the basic financial statements; the nature of the four Plans, including the membership and benefit provisions and contribution requirements; the System's investment authority and policies; how investments and related documentation are safeguarded; and selected details about various investment activity and balances.

Required Supplementary Information (RSI)

The RSI section provides actuarially determined information about the Plans. The section displays changes for each Plan's Net Pension Liability (NPL) and related ratios, contributions related to payrolls by Plan, and money-weighted investment returns for the System.

Summary and Analysis of Financial Information

The following Condensed Statements of Fiduciary Net Position and Changes in Fiduciary Net Position present financial information, with dollar amounts in millions, for the System comparing 2019 and 2018.

Condensed Combining Statement of Fiduciary Net Position
As of December 31, 2019 and 2018

(in millions)		Change in		
	2019	2018	Dollars	Percentage
Assets				
Cash and short-term investments	\$ 93.8	\$ 59.6	\$ 34.2	57.4
Securities lending collateral	61.7	54.0	7.7	14.3
Receivables	26.1	11.0	15.1	137.3
Investments at fair value and deposits	1,915.0	1,726.1	188.9	10.9
Total assets	2,096.6	1,850.7	245.9	13.3
Liabilities				
Investment settlements and accounts payable	29.4	15.7	13.7	87.3
Securities lending obligations	61.7	54.0	7.7	14.3
Total liabilities	91.1	69.7	21.4	30.7
Net position restricted for pension benefits	<u>\$ 2,005.5</u>	<u>\$ 1,781.0</u>	<u>\$ 224.5</u>	<u>12.6</u>

Condensed Combining Statement of Changes in Fiduciary Net Position
For Years Ended December 31, 2018 and 2017

(in millions)		Change in		
	2019	2018	Dollars	Percentage
Additions				
Employer contributions	\$ 78.0	\$ 72.0	\$ 6.0	8.3
Participant contributions	14.2	13.8	0.4	2.9
Investment income / gains /(losses)	264.7	(89.3)	354.0	(396.4)
Total additions	356.9	(3.5)	360.4	(10,297.1)
Deductions				
Benefit payments and refunds	130.6	126.2	4.4	3.5
Administrative expenses	1.8	1.6	0.2	12.5
Total deductions	132.4	127.8	4.6	3.6
Net increase/(decrease)	224.5	(131.3)	355.8	(271.0)
Net position restricted for pension benefits				
Beginning of year	1,781.0	1,912.3	(131.3)	(6.9)
End of year	<u>\$ 2,005.5</u>	<u>\$ 1,781.0</u>	<u>\$ 224.5</u>	<u>12.6</u>

Comparative investment time weighted returns are displayed by investment type in the following table. The table also shows each category's relative percent of the System's investment portfolio.

Investment Type	Percent of Investments		Annual Investment Return	
	2019	2018	2019	2018
Cash and temporary investments	2.9%	3.3%	2.3%	2.0%
Domestic equity	22.8	20.4	26.9	(7.2)
International equity pools	25.1	23.4	17.0	16.1
Domestic and international fixed income	22.1	19.9	10.3	(5.3)
Global asset allocation pools	8.9	13.6	11.7	(0.2)
Opportunistic	0.3	0.4	1.4	2.6
Private markets	7.0	7.4	5.9	16.1
Real estate investment pools	6.3	6.8	6.4	8.8
Stable value pooled investments	1.1	1.2	4.2	4.0
Absolute Return Fixed Income	3.5	3.6	7.7	0.5
Total percent of investments	100.0%	100.0%		
Total annual performance			14.8	(4.7)%

The System's funding objective is to meet long-term benefit obligations through contributions and investment income. The funding ratio, which is the actuarial value of assets divided by the actuarial accrued liability, is an estimate of how well the System is meeting that objective. A higher funded ratio indicates that the Plan is better funded. As of December 31, 2019 and 2018 the funded ratios for the System were 78.1% and 77.7%, respectively. Additionally, System fiduciary net position as a percentage of the total pension liability as of December 31, 2019 was 76.0%.

The System paid \$130.5 million in retirement benefits and refunds to 3,730 participants and beneficiaries during 2019, compared to \$126.2 million in 2018 to 3,623 participants and beneficiaries. This reflects an average of \$35.0 thousand per person in 2019, compared to an average of \$34.8 thousand in 2018.

The System received \$14.2 million in contributions from 4,016 active participants during 2019. In 2018, \$13.9 million was received from 3,931 active participants. The employer contributions were \$78.0 million in 2019, compared to \$72.0 million in 2018. Employer contributions for the calendar year are based on the appropriate June fiscal year's actuarial recommended contribution, which is divided by 12 and provided to the respective Plans on a monthly basis. The County contributed 100.0% of the 2019 Actuarially Determined Contribution (ADC) for all Plans and has contributed the ADC recommended by the actuary for the past 11 years, with true-up adjustments from 2010 to 2011 and 2014 to 2015. Administrative costs for 2019 were approximately \$1.8 million for 8,225 participants or an average cost of \$222 per person compared to \$1.6 million for 2018 administrative costs for 8,003 participants at \$200 per person.

Overall Analysis of Financial Position

The System reduced its long-term investment return assumption from 7.5% to 7.45% in 2019 which, as a more conservative approach, puts pressure on reducing the Net Pension Liability (NPL). The Board of Trustees believes the System is structured to support continued asset growth and stable funding for the future.

Requests for information

The System's Comprehensive Annual Financial Report is available at Anne Arundel County's web page <http://www.aacounty.org/boards-and-commissions/retirement-and-pension-system-board-of-trustees/pension-trust-fund-reports/>. If you have questions concerning this report or need additional financial information, please contact the Office of Personnel, 2660 Riva Road, Annapolis, Maryland, 21401.

Anne Arundel County Retirement and Pension System
Combining Statement of Fiduciary Net Position
December 31, 2019 (with December 31, 2018 Combined Comparative Totals)

	<i>Employees' Retirement Plan</i>	<i>Police Service Retirement Plan</i>	<i>Fire Service Retirement Plan</i>	<i>Detention Officers' and Deputy Sheriffs' Retirement Plan</i>	<i>2019 Combined Total</i>	<i>2018 Combined Total</i>
ASSETS						
Investments						
Cash and temporary investments	\$ 32,323,176	\$ 27,247,613	\$ 26,997,791	\$ 7,259,383	\$ 93,827,963	\$ 59,576,611
U. S. Government obligations	6,427,011	5,417,989	5,367,198	1,442,902	18,655,100	17,050,112
Corporate obligations	55,038,978	46,398,018	45,963,060	12,356,584	159,756,640	115,244,226
Fixed income mutual funds	53,174,144	44,825,957	44,405,736	11,937,917	154,343,754	151,395,687
International fixed income mutual funds	36,656,038	30,901,146	30,611,462	8,229,502	106,398,148	69,658,136
Global asset pools	61,130,391	51,533,097	51,050,000	13,724,143	177,437,631	242,619,215
Domestic equity	147,550,189	124,385,236	123,219,186	33,125,911	428,280,522	364,672,321
International equity pools	172,511,834	145,427,976	144,064,660	38,729,951	500,734,421	418,558,314
Private markets	52,807,090	44,516,530	44,099,209	11,855,512	153,278,341	139,137,871
Real estate investment pools	43,287,032	36,491,093	36,149,007	9,718,201	125,645,333	121,825,222
Absolute return fixed income	23,753,439	20,024,217	19,836,500	5,332,791	68,946,947	64,016,456
Aetna insurance pooled fixed income	7,367,480	6,210,807	6,152,584	1,654,044	21,384,915	21,938,741
Total investments	692,026,802	583,379,679	577,916,393	155,366,841	2,008,689,715	1,785,692,912
Collateral from securities lending transactions	21,257,401	17,920,051	17,752,059	4,772,415	61,701,926	54,019,376
Receivables						
Employer contributions	2,609,513	1,972,897	1,572,354	648,770	6,803,534	6,191,255
Participant contributions	397,429	300,359	286,385	113,828	1,098,001	1,036,163
Accrued interest and dividends	733,616	618,514	612,730	164,751	2,129,611	1,954,077
Investment sales proceeds	5,537,812	4,668,391	4,624,628	1,243,272	16,074,103	1,775,792
Total receivables	9,278,370	7,560,161	7,096,097	2,170,621	26,105,249	10,957,287
Deposits on hand	11,086	99,490	45,888	-	156,464	135,955
Total assets	722,573,659	608,959,381	602,810,437	162,309,877	2,096,653,354	1,850,805,530
LIABILITIES						
Accounts payable	754,300	636,725	629,582	169,221	2,189,828	2,453,694
Investment commitments payable	9,402,143	7,926,034	7,851,731	2,110,838	27,290,746	13,354,300
Obligation for collateral received under securities lending transactions	21,257,401	17,920,051	17,752,059	4,772,415	61,701,926	54,019,376
Total liabilities	31,413,844	26,482,810	26,233,372	7,052,474	91,182,500	69,827,370
Net position held in trust for pension benefits	\$ 691,159,815	\$ 582,476,571	\$ 576,577,065	\$ 155,257,403	\$ 2,005,470,854	\$ 1,780,978,160

Accompanying notes to the basic financial statements are an integral part of this statement.

Anne Arundel County Retirement and Pension System
Combining Statement of Changes in Fiduciary Net Position
For the Year Ended December 31, 2019 (with December 31, 2018 Combined Comparative Totals)

	<i>Employees' Retirement Plan</i>	<i>Police Service Retirement Plan</i>	<i>Fire Service Retirement Plan</i>	<i>Detention Officers' and Dep. Sheriffs' Retirement Plan</i>	<i>2019 Combined Total</i>	<i>2018 Combined Comparative Total</i>
ADDITIONS						
Contributions						
Employer	\$ 29,637,342	\$ 23,093,892	\$ 17,637,120	\$ 7,600,380	\$ 77,968,734	\$ 71,952,138
Participants	5,511,825	3,669,199	3,652,415	1,401,641	14,235,080	13,859,588
Total contributions	35,149,167	26,763,091	21,289,535	9,002,021	92,203,814	85,811,726
Investment income						
Net appreciation/(depreciation) in market value of investments	78,435,591	65,786,919	64,824,326	17,299,722	226,346,558	(127,497,252)
Interest income	8,822,799	7,599,164	7,908,500	1,931,892	26,262,355	21,437,400
Dividend income	8,192,431	6,868,180	6,800,169	1,814,660	23,675,440	28,348,331
Income from investment activities	95,450,821	80,254,263	79,532,995	21,046,274	276,284,353	(77,711,521)
Less investment expense	4,054,533	3,462,871	3,421,994	896,566	11,835,964	11,834,093
Net income from investing activities	91,396,288	76,791,392	76,111,001	20,149,708	264,448,389	(89,545,614)
Securities lending activities						
Securities lending income	534,010	447,442	443,274	118,257	1,542,983	1,438,723
Securities lending expenses						
Borrower rebates	407,738	341,640	338,457	90,294	1,178,129	985,427
Management fees	50,509	42,321	41,926	11,185	145,941	181,319
Total securities lending expenses	458,247	383,961	380,383	101,479	1,324,070	1,166,746
Net income from securities lending	75,763	63,481	62,891	16,778	218,913	271,977
Total investment income	91,472,051	76,854,873	76,173,892	20,166,486	264,667,302	(89,273,637)
Total additions	126,621,218	103,617,964	97,463,427	29,168,507	356,871,116	(3,461,911)
DEDUCTIONS						
Benefit payments	55,015,580	36,852,665	30,091,059	8,591,801	130,551,105	126,240,111
Administrative expenses	618,605	540,088	530,549	138,075	1,827,317	1,572,698
Total deductions	55,634,185	37,392,753	30,621,608	8,729,876	132,378,422	127,812,809
Change in fiduciary net position	70,987,033	66,225,211	66,841,819	20,438,631	224,492,694	(131,274,720)
Net position, January 1	620,172,782	516,251,360	509,735,246	134,818,772	1,780,978,160	1,912,252,880
Net position, December 31	\$ 691,159,815	\$ 582,476,571	\$ 576,577,065	\$ 155,257,403	\$2,005,470,854	\$ 1,780,978,160

Accompanying notes to the basic financial statements are an integral part of this statement.

1 Summary of Significant Accounting Policies

The Anne Arundel County Retirement and Pension System (System) administers four defined benefit pension plans – the Employees’ Retirement Plan, the Police Service Retirement Plan, the Fire Service Retirement Plan, and the Detention Officers’ and Deputy Sheriffs’ Retirement Plan (Plans). Although the assets of the Plans are commingled for investment purposes, each Plan’s assets may be used only for the payment of benefits to the members of that Plan, in accordance with its terms. The System was established as an Agency in the Executive branch of Anne Arundel County, Maryland (County) and has the powers and privileges of a corporation to the extent permitted by law. The System is reported as Pension Trust Funds in the County’s Comprehensive Annual Financial Report (CAFR). The Board of Trustees is comprised of representatives from the Executive branch of the County, participating employee groups, and two representatives from outside County government.

A Basis of Presentation – The accounts of the System are organized on the basis of separate pension trust funds for each Plan, each of which is considered a separate accounting entity. The operations of each fund are accounted for with a separate set of self-balancing accounts that comprise its assets, liabilities, net position, additions, and deductions.

B Basis of Accounting – The basic financial statements were prepared using the accrual basis of accounting. Plan member contributions are recognized in the period in which the contributions are due. The County’s contribution to each Plan is recognized when due and the County has made a formal commitment to provide the contribution. Benefits and refunds are recognized when due and payable in accordance with the terms of each Plan.

The accounting and reporting policies conform to accounting principles generally accepted in the United States of America as applicable to government organizations. The preparation of financial statements in conformity with these principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

C Investments – Investments are reported at fair value. Short-term investments are reported at cost, which approximates fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Mortgages are valued on the basis of future principal and interest payments, and are discounted at prevailing interest rates for similar instruments reflected at fair value. The fair value of real estate investments is based on periodic independent appraisals. Investments that do not have an established market, such as private markets, are reported at estimated fair values. The fair value of private markets are based on management’s valuation of estimates and assumptions from information and representations provided by the respective general partners, in the absence of readily ascertainable market values. There are no investments with parties or in entities related to the County. Fixed income securities are valued based on yields currently available on comparable securities of issuers with similar credit ratings.

D Administrative Expenses – The administrative expenses of the System are charged to the respective Plans on the basis of its percentage ownership in the System’s net position. Expenses are paid either by the County or from a separate cash account held by the custodian. Because of the commingled nature of funds, payments may be from either investment earnings or contributions. The total administrative expenses incurred during the year ended December 31, 2019 were \$1,827,317 of which approximately \$618,606 was initially paid through the County’s Accounts Payable department and subsequently reimbursed to the County by the System. The System is administered by employees within the County’s Office of Personnel and the Office of Finance. Some administrative costs are allocated to the Pension System and paid by the Custodian. Certain administrative costs are paid by the County’s General Fund and reimbursed by the System to the County.

E Income Taxes – The System qualifies under Section 401(a) of the Internal Revenue Code (IRC) and is exempt from income taxation as allowed by Section 501(a) of the IRC.

F Comparative Financial Information – The financial statements include prior-year combined comparative information for the System, which is required by generally accepted accounting principles. This prior-year information is not presented at the individual Plan level. These financial statements should be read in conjunction with the System’s audited financial report from 2018, from which the combined prior-year amounts were derived.

G New GASB Pronouncements – For the year ended December 31, 2019, there were no new GASB pronouncements to be implemented.

2 General Description of the System

A Covered Membership – Membership in each plan consisted of the following as of December 31, 2019, based on the January 1, 2020 actuarial valuation:

	Employees' Retirement Plan	Police Service Retirement Plan	Fire Service Retirement Plan	Detention Officers' and Deputy Sheriffs' Plan	Total
Retirees and beneficiaries receiving payments	2,051	758	626	295	3,730
Terminated Plan members entitled to but not yet receiving payments	301	-	-	6	307
Deferred Retirement Option (DROP)	-	73	73	26	172
Active Plan members	2,170	713	779	354	4,016
Total	<u>4,522</u>	<u>1,544</u>	<u>1,478</u>	<u>681</u>	<u>8,225</u>

B Plan Description, Contribution Information and Vesting – The following description of the System provides only general information. Participants should refer to the most recent Summary Plan Description booklets for a more complete description of the respective Plan's provisions.

Employees' Retirement Plan

Plan Description – The Employees' Retirement Plan is a single-employer defined benefit pension plan that covers all full-time general employees of the County who are not included in any other pension plan, as well as employees of Anne Arundel Economic Development Corporation. The Plan provides retirement, disability, and death benefits to Plan members and their beneficiaries pursuant to two separate benefit structures, Tier I and Tier II. Cost-of-living adjustments (COLAs) are also provided pursuant to County legislation.

Contributions – Contribution rates for participants are established through County legislation. Employees who elect to be in Tier I are required to contribute 4.0% of their annual covered salary. Tier II employees are not required nor permitted to make contributions. The County provided monthly contributions to the Plan based on the actuarially determined contribution for 2019 of \$29,637,346, as determined by the Plan's consulting actuary.

Cliff Vesting – Participants hired on or before June 30, 2015 will be fully vested after their fifth year of service. Termination prior to the fifth year will result in the return of all employee contributions, if applicable, plus 4.25% interest per annum with no additional benefits available. Participants hired on or after July 1, 2015 will be fully vested after their tenth year of service. Termination prior to the tenth year will result in the return of all employee contributions, if applicable, plus 4.25% interest per annum with no additional benefits available.

Police Service Retirement Plan

Plan Description – The Police Service Retirement Plan is a single-employer defined benefit pension plan that covers the following classes of workers: Police Officer, Police Sergeant, Police Lieutenant, Police Captain, Police Major, Deputy Police Chief, and (by election) the Chief of Police. The Plan provides retirement, disability, and death benefits to Plan members and their beneficiaries. COLAs are also provided pursuant to County legislation.

Contributions – Contribution rates for participants are established through County legislation. Plan participants are required to contribute 7.25% of their annual covered salary. The County provided monthly contributions to the Plan based on the actuarially determined contribution for 2019 of \$23,093,892, as determined by the Plan's consulting actuary.

Normal Retirement – Participants hired on or after February 25, 2002 will be fully vested on the earlier of their attainment of age 50 and completion of their fifth year of service, or their completion of 20 years of service. Participants hired before February 25, 2002 will be fully vested on the earlier of their attainment of age 50 or completion of 20 years of service. Termination prior to attainment of Normal Retirement will result in the return of all employee contributions, if applicable, plus 3.0% interest per annum with no additional benefits available.

Fire Service Retirement Plan

Plan Description – The Fire Service Retirement Plan is a single-employer defined benefit pension plan that covers the following classes of workers: Fire Fighter II, Fire Fighter III, Fire Fighter Cardiac Rescue Technician, Fire Fighter/Emergency Medical Technician-Paramedic, Fire Lieutenant, Fire Captain, Fire Battalion Chief, Fire Division Chief, Fire Deputy Chief, and (by election) the Fire Administrator. The Plan provides retirement, disability, and death benefits to plan members and their beneficiaries. COLAs are also provided pursuant to County legislation.

Contributions – Contribution rates for participants are established through County legislation. Plan participants are required to contribute 7.25% of their annual covered salary. The County provided monthly contributions to the Plan based on the actuarially determined contribution for 2019 of \$17,637,120, as determined by the Plan's consulting actuary.

Normal Retirement – Participants who retire on or after July 1, 2002 will be fully vested on the earlier of their attainment of age 50 and completion of their fifth year of service, or their completion of 20 years of service. Participants who retired prior to July 1, 2002 will be fully vested on the earlier of their attainment of age 50 and completion of 5 years of service. Termination prior to attainment of Normal Retirement will result in the return of all employee contributions, if applicable, plus 3.0% interest per annum with no additional benefits available.

Detention Officers' and Deputy Sheriffs' Retirement Plan

Plan Description – The Detention Officers' and Deputy Sheriffs' Retirement Plan is a single-employer defined benefit pension plan that covers the following classes of workers: Detention Officer I, Detention Officer II, Detention Officer III, Correctional Program Specialist I, Correctional Program Specialist II, Criminal Justice Program Supervisor, Security Administrator, Correctional Facility Administrator, Assistant Correctional Facility Administrator, Deputy Sheriff I, Deputy Sheriff II, Deputy Sheriff III, Deputy Sheriff IV, and (by election) the Superintendent of Detention Facilities. The plan provides retirement, disability, and death benefits to Plan members and their beneficiaries. COLAs are also provided pursuant to County legislation.

Contributions – Contribution rates for participants are established through County legislation. Plan participants are required to contribute 6.75% of their annual covered salary. The County provided monthly contributions to the Plan based on the actuarially determined contribution for 2019 of \$7,600,383, as determined by the Plan's consulting actuary.

Cliff Vesting – Participants will be fully vested on the attainment of age 50 and completion of their fifth year of service. Termination prior to attainment of Normal Retirement will result in the return of all employee contributions, if applicable, plus 4.25% interest per annum, with no additional benefits available.

C Legislative Changes for the Past Five Years

Bill No. 56-16 added interest in the 6th year of DROP for Police and DO/DS plans and added the exception to the benefit reduction for retired police officers who participated in the DROP program reemployed into a position in the Sheriff's or State's Attorney's Office requiring certification as a police officer.

Bill No. 86-16 modifies provisions of the County Code relating to the Employees' Retirement Plan ("the Plan") so that new employees will have the option to make an irrevocable election to participate in either Tier One or Tier Two of the Plan within the first 30 days of hire. The bill will eliminate current Code language allowing employees who elect Tier Two to transfer to Tier One within five years of hire.

Bill No. 78-17 eliminates the reduction in benefit for DROP retirees participating in the Police Service Retirement Plan and the Detention Officers' and Deputy Sheriffs' Retirement Plan, and DROP retirees from the Fire Service Plan who retired from non-represented positions, if they are reemployed in any capacity that meets the exceptions set forth in § 5-1-203(c)(1). The bill also adds an exception under § 5-1-203(c) for any retirees (including DROP participants) who are reemployed into a grant-funded contractual position under §802(a)(17) of the Charter.

There will be no reduction in retirement benefits for police officers, detention officers, deputy sheriffs, or fire deputy and division chiefs retiring in the DROP, so long as they retired as a classified employee and are reemployed in an exempt 1500-hour contractual position, a grant-funded contractual position, or in a position with the Sheriff or State's Attorney's offices that requires certification as a police officer. The bill also allows any retiree formerly employed in the classified service to work in a grant-funded contractual position without a reduction in benefits.

If the affected DROP retirees are reemployed in a position in the classified service, however, they will have a reduction in retirement benefits during the reemployment as required under § 5-1-203(b). This is the same for other County retirees who were previously employed in the classified service. DROP retirees in the Fire Service Retirement Plan who retire from a represented position will continue to have the retirement benefit reduction required by § 5-1-515 upon reemployment.

Bill No. 95-17 created the new 401(a) Employee Retirement Savings Plan. Effective July 1, 2018, any employee hired in any position eligible to participate in the Employees' Retirement System shall have the election to choose the Employee Retirement Savings Plan. Employee contribution for the Savings Plan is 4% and there is an 8% employer contribution. An employee vests in the new plan in 5 years.

Bill No. 66-18 modifies the interest earned on accounts for certain employees who participated in the Deferred Retirement Option Program (DROP). Participants of the Fire Service Retirement Plan, except for those in the classification of Battalion Chief, are eligible for interest in the 6th year of DROP after July 1, 2018. Participants in the DROP from the Police Service Retirement Plan and Detention Officers' and Deputy Sheriffs' Retirement Plan are already eligible for interest in the 6th year.

3 Deferred Retirement Option Program (DROP)

The Police Service, Fire Service and Detention Officers' and Deputy Sheriffs' Retirement Plans offer DROP plans. These programs permit a Plan member to be credited for benefit payments into an individual account within the Plan while continuing to provide services to the employer and to be paid a salary. All Plans allow accumulation of pension after 20 years of County service. DROP period must be between 3 and 5 years. Members may remain in DROP for a sixth year, but no interest shall be credited to the DROP account in the sixth year. The lump sum values held by the System pursuant to the DROP programs are \$9,522,039 for the Police Service Plan, \$9,732,718 for the Fire Service Plan and \$2,781,762 for the Detention Officers' and Deputy Sheriffs' Retirement Plan.

4 Net Pension Liability of the System by Plan

The components of the net pension liability and assumptions for each Plan at December 31, 2019 based on the actuarial valuations are displayed below. The valuation date is January 1, 2019 which is then rolled forward to the measurement date of December 31, 2019.

	Employees' Retirement Plan	Police Service Retirement Plan	Fire Service Retirement Plan	Detention Officers' and Deputy Sheriffs' Retirement Plan
Total pension liability	\$ 973,355,989	\$ 759,568,512	\$ 691,561,715	\$ 213,233,864
Plan fiduciary net position	(690,383,355)	(581,733,564)	(575,886,891)	(155,082,765)
Plan net pension liability	<u>\$ 282,972,634</u>	<u>\$ 177,834,948</u>	<u>\$ 115,674,824</u>	<u>\$ 58,151,099</u>
Plan fiduciary net position as a percentage of the total pension liability	70.93%	76.59%	83.27%	72.73%

Note to schedule	Source is actuarial data based on preliminary financials. The difference between this schedule and the final combining statement of changes in fiduciary net position on Page 14 are considered immaterial.			
Actuarial assumptions	The total pension liability was determined by an actuarial valuation as of December 31, 2019 using the following summarized actuarial assumptions, applied to all periods in the measurement. Full descriptions of the actuarial assumptions are available in the January 1, 2019 valuation reports. The most recent Experience and Assumption Study was conducted in 2018 for the period 2012 to 2016.			
Inflation	3.00%	3.00%	3.00%	3.00%
Salary increases	Rates vary by participant age for each Plan.			
Investment rate of return	7.45%, net of pension plan investment expense, including inflation for each Plan.			
Mortality Scale	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018.			
Set forward for post-disability mortality.	9 years	5 years	5 years	5 years
The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the Actuarial Statement Section included in this Comprehensive Annual Financial Report.				

Discount Rate – The discount rate used to measure the total pension liability was 7.45% as of December 31, 2019. The projection of cash flows used to determine the discount rate assumed plan contributions will be made in amounts consistent with statutory provisions and recognizing the System’s current funding policy and cost-sharing mechanism between employers and members. For this purpose, all contributions that are intended to fund benefits for all plan members and their beneficiaries are included, except that projected contributions that are intended to fund the service costs for future plan members and their beneficiaries are not included.

Based on those assumptions, the System’s fiduciary net position was projected to be available to make all projected future benefit payments for 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 as of December 31, 2019.

Sensitivity of the net pension liability to changes in the discount rate – The following schedule presents the net pension liability, calculated using the discount rate of 7.45%, as well as what the Plan’s net pension liability would be if it were calculated using a discount rate that is 1.0 percentage point lower (6.45%) or 1.0 percentage point higher (8.45%) than the current rate.

	Employees'	Police Service	Fire Service	Detention Officers'
	<u>Retirement Plan</u>	<u>Retirement Plan</u>	<u>Retirement Plan</u>	and Deputy Sheriffs'
				<u>Retirement Plan</u>
1% Decrease to 6.45%	\$ 393,442,913	\$ 273,046,374	\$ 202,779,637	\$ 82,608,048
Current Discount Rate 7.45%	\$ 282,972,634	\$ 177,834,948	\$ 115,674,824	\$ 58,151,099
1% Increase to 8.45%	\$ 189,930,038	\$ 100,037,960	\$ 44,249,266	\$ 37,832,961

Long Term Expected Returns – For investment purposes, the four Plans which comprise the System are managed on a commingled basis and the long-term expected rates of investment return are the same for each Plan. The long-term (30-year) expected rate of return on pension System 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 using an optimizer program that relies on the arithmetic return inputs, the standard deviation forecast (risk) for each asset class, and the correlations among them. The result is a 30-year nominal, geometric, net-of-fee return forecast for the pension assets. The 30-year real rate of return is calculated by netting the inflation assumption out of the nominal forecast. The nominal and real rates of return forecasts for each major asset class included in the pension System's target asset allocation of December 31, 2019 (see the discussion of the System's investment policy) are summarized in the following table:

**30-Year Return Assumptions by Asset Class
As of December 31, 2019**

Asset Class	30-Year Geometric Forecast	
	(Nominal Returns)	(Real Returns)
Cash	3.00%	0.24%
U.S. Treasuries	3.75%	0.97%
IG Corp Credit	5.75%	2.92%
Mortgage Backed Securities	3.75%	0.97%
Bank Loans	5.50%	2.68%
Core Fixed Income	4.37%	1.57%
High-Yield Bonds	6.50%	3.65%
Absolute Return Fixed Income	4.75%	1.95%
Emerging Market Debt (External)	6.25%	3.41%
Emerging Market Debt (Local Currency)	6.75%	3.89%
Large Cap Equity	7.50%	4.62%
Small/Mid Cap Equity	7.75%	4.87%
International Equities (Unhedged)	7.75%	4.87%
Emerging Int'l Equities	9.25%	6.33%
Private Equity	11.15%	8.18%
Private Debt	8.11%	5.22%
Real Estate	6.25%	3.41%
Hedge Funds	6.76%	3.90%
Hedge Funds (Macro)	6.50%	3.65%
**Risk Parity	6.78%	3.92%

Note: NEPC's 30-year geometric CPI inflation assumption is 2.75%. NEPC's 5-7 year geometric CPI inflation assumption is 2.25%.

** Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).*

*** Risk Parity Allocation Modeled as 2.25% Global Macro Hedge Funds and the balance Bridgewater All Weather (using NEPC manager specific assumptions for Bridgewater).*

5 Risks and Uncertainties

The System may invest in various types of investment securities. Investment securities are exposed to various risks, such as interest rate, market, and credit risk. Due to the level of risk associated with certain investment securities, it is possible that changes in the values of investment securities may occur in the near-term and that such changes could materially affect the amounts reported in the Statement of Fiduciary Net Position.

6 Investments

A General Investment Policy – The System operates under the “Prudent Person” rule used herein, meaning that in investing, the governing authorities of the systems, funds and plans, shall exercise the judgment and care under the circumstances then prevailing, that an institutional investor of ordinary prudence, discretion, and intelligence exercises in the management of investments entrusted to it, not in regard to speculation, but in regard to the permanent disposition of funds, considering probable safety of capital as well as probable income. Investments are made in full accordance with any and all applicable Maryland statutes, as well as any other applicable legislation or regulation, state, federal or otherwise. The roles and responsibilities of the Board of Trustees, the Investment Committee, the Investment Consultant, the Investment Managers and the Custodian are clearly defined. The Board has established a diversified portfolio to meet the System’s return requirements. The table below summarizes the target asset allocation.

Asset Class	Market Target (%)	Minimum Exposure (%)	Maximum Exposure (%)
Domestic Equity	21	12	31
International Equity	17	7	27
Emerging Market Equity	7	0	12
Domestic Fixed Income	22	5	41
Emerging Market Debt	5	0	10
Private Markets	11	0	20
Real Estate	6	0	11
Global Asset Allocation (GAA)	9	5	15
Cash	2	0	10

B Investments Authorized — The System is authorized to invest in U.S. Government securities, insurance company general accounts, commercial paper, money market mutual funds, corporate bonds, common and international stocks, limited partnerships, absolute return funds, private equity, mortgage participation notes and real estate. State statutes do not prohibit the System from participating in securities lending transactions. (See Note 7 to the basic financial statements for additional information concerning the System's security lending transactions.)

C Custodial Credit Risk, Deposits — Custodial credit risk for deposits is the risk that the System will not be able to recover its deposits, in the event of the failure of a depository financial institution or will not be able to recover collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the System, and are held by either a counterparty or the counterparty's trust department or agent but not in the System's name. As of December 31, 2019, there were no investments that met this criteria.

D Concentration Risk — Concentration risk is the risk of loss to the System attributed to the magnitude of the System's investment in a single issuer. As of December 31, 2019, there was no exposure to a single issuer greater than 5.0% of the plan net position, excluding investment pools. The System's Investment Policy Statement sets maximum concentration limits by asset type and style.

E. Rate of Return — For the year ended December 31, 2019, the annual money-weighted rate of return on pension system investments, net of System expenses, was 14.5%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

F Interest Rate Risk — Interest rate risk is the risk that changes in interest rates will adversely affect the value of an investment. The fair value of fixed income (debt) securities is affected by increases and declines in interest rates. These investments may also have embedded call features allowing the issuer to redeem part or all of the issue prior to maturity at a pre-set price. In addition, debt issues may have interest rates that vary according to a pre-determined external index (such as the London Inter-Bank Offered Rate) or a pre-determined step-up in the interest rate at a pre-determined date(s). The Investment Policy Statement (IPS) sets limits on floating rates for mortgage backed securities and establishes limits on the average duration of some investment types.

The following table uses the *Segmented Time Distribution* method to display the System's debt holdings by maturity term and investment type. Some issues within the categories agencies/instrumentalities, corporate bonds,

collateralized mortgage obligations, and other asset-backed securities have variable rate features. The total fair value of these securities was \$8,595,005 as of December 31, 2019.

Investment Type	Fair Value	Investment Maturities (in Years)			
		Less than 1 year	1 to 5	6 to 10	over 10
Money market pools	\$ 93,827,963	\$ 93,827,963	\$ -	\$ -	\$ -
U.S. Treasuries	18,655,100	-	3,935,638	942,831	13,776,631
Agency/Instrumentalities	45,096,150	819,487	89,031	103,210	44,084,422
Corporate Bonds	79,222,697	519,648	27,697,676	37,002,242	14,003,131
Bank Loans	8,556,799	-	3,811,208	4,745,591	-
Bond Mutual Funds	260,741,903	260,741,903	-	-	-
Collateralized Mrtg Obligations	8,595,005	33,120	120,288	-	8,441,597
Other Asset-Backed Securities	1,616,620	-	-	39,982	1,576,638
Foreign and Yankee Bonds	16,669,430	472,109	4,404,050	7,978,062	3,815,209
Totals	\$ 532,981,667	\$ 356,414,230	\$ 40,057,891	\$ 50,811,918	\$ 85,697,628

The segmented time distribution table includes issues with call features and assumes that these issues will be held to maturity. The total fair market value of callable securities totals \$69,402,684 with call dates ranging from January 15, 2020, for continuously callable issues, to September 20, 2059. The callable holdings include issues with floating interest rates which have a market value of \$13,030,714.

G Credit Risk – Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations to the System. Debt securities are rated by Nationally Recognized Statistical Rating Organizations to provide purchasers with an opinion of the capability and willingness of a borrower to re-pay its debt. The following table displays the System's debt holdings and quality ratings from Standard & Poor's. The Investment Policy Statement provides guidelines to all fixed income managers related to allowable quality ratings.

	Total Fair Value	Standard & Poor's Credit Ratings				
		AAA - A	BBB - B	CCC - C	D	NR
Agency/Instrumentalities	\$ 45,096,150	\$ -	\$ -	\$ -	\$ -	\$ 45,096,150
Collateralized Mort.Obligations	8,595,005	2,740,635	344,565	898,660	-	4,611,145
Other Asset-backed Obligations	1,616,620	699,777	23,321	234,276	-	659,246
Corporate Bonds	79,222,697	12,949,452	63,826,069	954,367	-	1,492,809
Bank Loans	8,556,799	-	-	-	-	8,556,799
Yankee & Foreign Gov.Issued	16,669,430	3,549,552	12,460,832	218,614	-	440,432
Guaranteed Invest Contracts	21,384,914	-	-	-	-	21,384,914
Mutual Funds	260,741,903	-	-	-	-	260,741,903
Short Term Investment Pools	93,827,963	-	-	-	-	93,827,963
Total Credit Risk of Debt Securities	\$ 535,711,481	\$ 19,939,416	\$ 76,654,787	\$ 2,305,917	\$ -	\$ 436,811,361
US Gov't & Agencies *	18,655,100					
Total Debt Securities	\$ 554,366,581					

*U.S. government agency securities explicitly guaranteed by the U.S. government are categorized here.

H Foreign Currency Risk – The investment policy recognizes the value of global diversification. A maximum of 66.0% in international/global exposure is allowed. The System retains six managers for global and international equity and fixed income exposure. These managers may also purchase or sell currency on a spot basis and may enter into forward exchange contracts on currency provided that the use of such contracts is designed to dampen portfolio volatility or to facilitate the settlement of securities transactions.

There is potential risk with exposure to foreign currency relating to potential unfavorable fluctuation of exchange rates compared with the U.S. Dollar. The System's direct exposure to foreign currency was zero as of December 31, 2019. The fair market value of international/global equities and fixed income assets that were managed in pooled funds totaled \$784,570,200 as of December 31, 2019.

I Fair Value Measurement – The System categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and give the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). Level 1 inputs are quoted prices in active markets for identical assets, Level 2 inputs are significant other observable inputs, and Level 3 inputs are significant unobservable inputs. As of December 31, 2019 all short-term investments were in money market mutual funds which are not subject to the fair value measurement requirements.

Level 1	Unadjusted quoted prices in active markets for identical instruments.
Level 2	Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuation in which all significant inputs are observable.
Level 3	Valuations derived from valuation techniques in which significant inputs are unobservable.

Investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

The following table shows the fair value leveling of the System's investment portfolio at December 31, 2019.

Anne Arundel County Retirement and Pension System
Notes to the Basic Financial Statements

Assets at Fair Value December 31, 2019		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investment Type	Fair Value			
Fixed Income Investments				
U.S. Government obligations	\$ 18,655,100	\$ -	\$ 18,655,100	\$ -
Agency/Instrumentalities	45,096,150	-	45,096,150	-
Collateralized Mort. obligations	8,595,005	-	7,792,450	802,555
Other asset-backed obligations	1,616,620	-	1,087,763	528,857
Corporate bonds	79,222,697	-	79,222,697	-
Bank Loans	8,556,799	-	8,556,799	-
Yankee & Foreign Gov. Issued	16,669,430	-	16,669,430	-
Fixed income mutual funds	84,774,824	1,094,883	83,679,941	-
Total fixed income investments	263,186,625	1,094,883	260,760,330	1,331,412
Equity Investments				
Domestic equity	428,280,460	372,759,638	55,520,822	-
International equity pools	273,650,975	273,650,975	-	-
Total equity investments	701,931,435	646,410,613	55,520,822	-
Total investments by fair value level	\$ 965,118,060	\$ 647,505,496	\$ 316,281,152	\$ 1,331,412

Pension System Net Asset Value December 31, 2019

Investment Types at net asset value	Net Asset Value	Unfunded Commitments as of 12/31/19	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Absolute return fixed income	\$ 68,946,948	\$ -	Daily	Daily
Commingled funds-debt	69,568,930	-	Twice monthly	15 days
Commingled funds-equities	137,463,716	-	Monthly	5 Business days
International equity pool	89,619,731	-	Daily	Daily
International fixed income mutual funds	106,398,148	-	Daily	Daily
Real estate (REIT) fund	125,645,333	-	Quarterly	90 days
Global asset pools	177,437,631	-	Monthly	5 Business days
Private markets buyouts	78,438,909	82,160,678	Not eligible	Not eligible
Private markets mezzanine	6,230,408	1,715,981	Not eligible	Not eligible
Private markets secondaries	17,689,547	28,943,871	Not eligible	Not eligible
Private markets distressed	25,823,368	35,005,000	Not eligible	Not eligible
Private markets fund of funds	5,455,577	1,728,845	Not eligible	Not eligible
Private markets energy	19,640,532	7,715,620	Not eligible	Not eligible
Total at net asset value	928,358,778	\$ 157,269,995		
Investments measured at amortized cost				
Money market pools	93,827,963			
Aetna insurance pooled fixed income	21,384,914			
Total Investments	\$ 2,008,689,715			

Securities classified in Level 1 are valued using quoted prices in active markets for those securities. Securities classified in Level 2 and Level 3 are valued using methodologies such as various bid evaluations, market averages and other matrix pricing techniques as well as values derived from associated traded securities or last trade data. In instances where inputs used to measure fair value fall into different levels, the fair value is categorized based on the lowest level input that is significant to the valuation.

Investments valued at the net asset value per share (or its equivalent) have been classified separately in the table above and include investments considered to be Alternative Investments as defined by the American Institute of Certified Public Accountants. The definition includes investments for which a readily determinable fair value does not exist (that is, investments not listed on national exchanges or over-the-counter markets, or for which quoted market prices are not available from sources such as financial publications, the exchanges, or NASDAQ). These types of investments can be held within any of the asset classes used by the System based on underlying portfolio holdings and analysis of risk and return relations. These investments can be structured in different ways, including limited partnerships, limited liability companies, common trusts, and mutual funds. Some are closed-ended with a specific life and capital commitments while others are open-ended with opportunity for ad hoc contributions or withdrawals and termination with proper notice.

Commingled/Mutual Funds: These types of funds are open-ended funds and may be utilized for a variety of asset classes, including equity, fixed income, and Real Estate Investment Trusts (REITS). They are funds made up of underlying securities that have readily available fair values (publicly traded stocks or bonds). The System owns units of these funds rather than the individual securities. Contributions or withdrawals from the funds can be made as needed, generally with daily or monthly liquidity, with a notice period of one to thirty days. Because they are liquid funds, there are no unfunded commitments for these types of investments.

Private Markets: Private Market investments are typically private interests in corporations across different areas of the capital structure and in different stages of the corporations' development via limited partnership vehicles. Private Market investments are illiquid and long term in nature (10-12 years), typically held until maturity. These portfolios generally have a "J-Curve Effect" whereby there are low to negative returns in the initial years due to the payment of investment management fees and initial funding of investments made by the General Partner during a period when investments are typically carried at cost and returns have not been realized. To diversify the program, investments are made across business cycles, vintage years, and different strategies. The Systems' Investment Policy Statement has a dedicated asset class for Private Markets. There is no option to request redemptions from the Private Market funds.

7 Securities Lending

The Board of Trustees authorizes the System to lend securities held by the custodian, State Street Bank and Trust Company, to broker-dealers and other entities with a simultaneous agreement to return the collateral for the same securities in the future. The System's Lending Agent is Deutsche Bank AG (DB). Deutsche Bank AG lends securities for collateral in the form of cash or other securities of 102 percent for domestic securities and 105 percent for international. Cash collateral received by the System with respect to these transactions is invested in a separate, un-pooled account basis at the direction of the Board of Trustees in fully collateralized Repurchase Agreements.

At year end, the System had no credit risk exposure to borrowers because the amount of collateral held by the System was greater than the value of securities on loan. The market value of collateral held as of December 31, 2019 was \$69,917,128, of which \$61,701,926 was cash and \$8,215,202 were U.S. Treasury securities. The market value of securities on loan for the System as of December 31, 2019 was \$68,264,610.

The System did not impose any restrictions during the year on the amount of the loans that the agent made on its behalf. Moreover, there were no losses during the year resulting from a default of the borrowers or custodian.

All security loans can be terminated on demand by either the System or the borrower. Cash collateral received was invested in Repurchase Agreements, which as of December 31, 2019 had a weighted average final maturity of 19.0 days. The interest rate risk is zero days as assets and liabilities can be rate changed on a daily basis.

8 Financial Instruments With Off-Balance Sheet Risk

Mortgage-Backed Securities – A mortgage-backed security depends on the underlying pool of mortgage loans to provide the cash flow to make principal and interest payments on the security. A decline in interest rates can result in prepayments, which reduce the fair value of the security. If homeowners pay on mortgages longer than anticipated, the cash flows are greater and the return on investment would be higher than anticipated. A collateralized mortgage obligation (CMO) is a mortgage-backed security that is comprised of classes or tranches of bonds. Each class is structured to achieve a specific level of cash flow based on the prepayment assumptions assigned to the underlying mortgage pool.

The System invests in mortgage-backed securities to enhance fixed income returns. Mortgage-backed securities are subject to credit risk, the risk that the borrowers will be unable to meet their obligations. These securities are also subject to prepayment risk, which is the risk that a payment will be made in excess of the regularly scheduled principal payment. Prepayment risk is comprised of two risks: call risk, (the risk that prepayments will occur when interest rates have declined), and extension risk, (the risk that prepayments will not be made when interest rates have increased.) As of December 31, 2019, the fair value of government mortgage-backed securities was \$18,655,100, asset-backed securities was \$1,616,620, and CMO's was \$8,595,005. These are included in the corporate obligations total on the Statement of Fiduciary Net Position.

9 Exposure to Derivatives

Derivative instruments are securities that derive value from another asset and are in the form of a contract between two or more parties. Common derivatives are futures contracts, forwards contracts, options, and swaps. The System has no direct exposure to derivative securities. There are, however, mutual funds, commingled funds, and other investment vehicles in which the System has a percentage ownership that have exposure to futures, currency forward contracts, commodity forward contracts, and total return swap contracts. These funds enter into derivative contracts as part of their investment strategies to mitigate risk and volatility.

A derivative policy statement is included in the Investment Policy Statement (IPS). Prohibited instruments include options, commodities, uncovered options or futures, uncovered short positions, short selling, and use of financial leverage. The derivative exposure as of December 31, 2019 within the mutual funds, commingled funds, and other investment vehicles is comprised of allowable instruments based on the IPS.

10 Contingencies

Certain legal proceedings are pending against the System arising from its normal activities that, based on the facts presently available and the advice of legal counsel, management believes will not have a material adverse effect on the System's financial condition upon settlement.

11 Commitments

The System has committed to fund various private market investments totaling \$390.2 million at December 31, 2019, of which approximately \$157.3 million remains unfunded. Additional details regarding the unfunded balances are in Note 6. The expected funding dates for these commitments extend through 2024.

12 Subsequent Events

The system evaluated subsequent events through July 20, 2020, the date the financial statements were available to be issued. Events or transactions occurring after December 31, 2019, but prior to July 20, 2020 that provided additional evidence about conditions that existed at December 31, 2019, have been recognized in the financial statements for the year ended December 31, 2019. Events or transactions that provided evidence about conditions that did not exist at December 31, 2019, but arose before the financial statements were available to be issued have not been recognized in the financial statements for the year ended December 31, 2019.

Subsequent to December 31, 2019, global economies and capital markets have been adversely impacted by the COVID-19 pandemic and these events will be appropriately monitored for potential long-term impact on the System's portfolio and funding position.

Anne Arundel County Retirement and Pension System
Required Supplementary Information
Schedule of Changes in the Net Pension Liability and Related Ratios – Employees' Retirement Plan
For Years ended December 31

	2019	2018	2017	2016	2015	2014
Total pension liability (Dollar amounts in thousands)						
Service cost	\$ 16,344	\$ 16,687	\$ 15,497	\$ 15,144	\$ 15,115	\$ 14,159
Interest	65,128	63,246	60,502	59,292	58,329	53,353
Changes of benefit terms	-	-	-	-	-	-
Differences between expected and actual experience	12,546	3,826	9,562	(12,599)	(17,971)	16,408
Changes of assumptions	32,671	-	-	-	-	22,567
Benefit payments, including refunds of member contributions	(55,081)	(50,575)	(47,380)	(44,024)	(41,253)	(39,012)
Net change in total pension liability	71,608	33,184	38,181	17,813	14,221	67,475
Total pension liability - beginning	901,748	868,564	830,383	812,570	798,349	730,874
Total pension liability - ending (a)	<u>\$ 973,356</u>	<u>\$ 901,748</u>	<u>\$ 868,564</u>	<u>\$ 830,383</u>	<u>\$ 812,570</u>	<u>\$ 798,349</u>
Plan fiduciary net position						
Contributions - employer	29,637	27,033	25,654	25,810	25,630	24,451
Contributions - member	5,512	5,612	5,472	5,182	4,847	4,662
Net investment income	90,338	(31,166)	94,908	41,345	(8,374)	28,451
Benefit payments, including refunds of member contributions	(55,081)	(50,575)	(47,380)	(44,024)	(41,253)	(39,012)
Administrative expense	(609)	(543)	(526)	(497)	(504)	(519)
Net change in plan fiduciary net position	69,797	(49,640)	78,127	27,816	(19,654)	18,034
Plan fiduciary net position - beginning	620,587	670,226	592,099	564,283	583,936	565,902
Plan fiduciary net position - ending (b)	<u>\$ 690,383</u>	<u>\$ 620,587</u>	<u>\$ 670,226</u>	<u>\$ 592,099</u>	<u>\$ 564,283</u>	<u>\$ 583,936</u>
County's net pension liability - ending (a)-(b)	<u>\$ 282,973</u>	<u>\$ 281,161</u>	<u>\$ 198,337</u>	<u>\$ 238,284</u>	<u>\$ 248,287</u>	<u>\$ 214,413</u>
Plan fiduciary net position as a percentage of the total pension liability	70.9%	68.8%	77.2%	71.3%	69.4%	73.1%
Covered payroll	\$ 138,428	\$ 134,892	\$ 138,239	\$ 130,313	\$ 127,827	\$ 127,091
County's net pension liability as a percentage of covered payroll	204.4%	208.4%	143.5%	182.9%	194.2%	168.7%
Expected average remaining service years of all participants	5	5	5	5	5	5

Notes to Schedule:

- 1 Source is actuarial data based on preliminary financials. The differences between this schedule and the final combining statement of changes in fiduciary net position on page 14 are considered immaterial.
- 2 This schedule is presented to illustrate the requirement to show information for 10 years. However, until 10-year trend is compiled, pension plans should present for those years for which data is available.
- 3 There are no benefit changes reflected in the current schedule.
- 4 For 2019, the expected rate of investment return was reduced from 7.5% to 7.45% and other assumptions were changed to reflect results of the 2018 experience study.
- 5 The following assumptions were changed: interest rate, mortality, retirement rates, turnover rates, and disability rates.
Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Anne Arundel County Retirement and Pension System
Required Supplementary Information
Schedule of Changes in the Net Pension Liability and Related Ratios-Police Retirement Plan
For Years Ended December 31

	2019	2018	2017	2016	2015	2014
Total pension liability (Dollar amounts in thousands)						
Service cost	\$ 13,064	\$ 12,826	\$ 12,689	\$ 12,057	\$ 12,258	\$ 10,951
Interest	52,474	50,963	48,563	47,032	45,473	41,480
Changes of benefit terms	-	-	-	-	-	-
Differences between expected and actual experience	(2,017)	(2,591)	6,202	(4,527)	(4,693)	12,801
Changes of assumptions	10,096	-	-	-	-	18,331
Benefit payments, including refunds of member contributions	(36,791)	(35,938)	(34,950)	(33,357)	(31,134)	(29,507)
Net change in total pension liability	36,826	25,261	32,504	21,205	21,903	54,055
Total pension liability - beginning	722,742	697,482	664,978	643,773	621,870	567,815
Total pension liability - ending (a)	<u>\$ 759,569</u>	<u>\$ 722,742</u>	<u>\$ 697,482</u>	<u>\$ 664,978</u>	<u>\$ 643,773</u>	<u>\$ 621,870</u>
Plan fiduciary net position						
Contributions - employer	23,094	21,934	20,931	20,411	19,560	18,870
Contributions - member	3,669	3,372	3,250	3,158	3,104	2,950
Net investment income	75,786	(25,860)	78,155	33,500	(7,869)	21,813
Benefit payments, including refunds of member contributions	(36,791)	(35,938)	(34,950)	(33,357)	(31,134)	(29,507)
Administrative expense	(530)	(464)	(445)	(417)	(423)	(418)
Net change in plan fiduciary net position	65,228	(36,956)	66,941	23,295	(16,762)	13,707
Plan fiduciary net position - beginning	516,505	553,461	486,520	463,225	479,988	466,281
Plan fiduciary net position - ending (b)	<u>\$ 581,734</u>	<u>\$ 516,505</u>	<u>\$ 553,461</u>	<u>\$ 486,520</u>	<u>\$ 463,225</u>	<u>\$ 479,988</u>
County's net pension liability - ending (a)-(b)	<u>\$ 177,835</u>	<u>\$ 206,237</u>	<u>\$ 144,020</u>	<u>\$ 178,458</u>	<u>\$ 180,547</u>	<u>\$ 141,882</u>
Plan fiduciary net position as a percentage of the total pension liability	76.6%	71.5%	79.4%	73.2%	72.0%	77.2%
Covered payroll	\$ 53,035	\$ 48,322	\$ 45,989	\$ 44,894	\$ 43,879	\$ 42,960
County's net pension liability as a percentage of covered payroll	335.3%	426.8%	313.2%	397.5%	411.5%	330.3%
Expected average remaining service years of all participants	4	4	4	4	4	4

Notes to Schedule:

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- 3 There are no benefit changes reflected in the current schedule.
- 4 For 2019, the expected rate of investment return was reduced from 7.5% to 7.45% and other assumptions were changed to reflect results of the 2018 experience study.
- 5 The following assumptions were changed: interest rate, mortality, retirement rates, and turnover rates.
Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.
- 6 Covered payroll does not include pay for members in DROP.

Anne Arundel County Retirement and Pension System
Required Supplementary Information
Schedule of Changes in the Net Pension Liability and Related Ratios-Fire Retirement Plan
For Years Ended December 31

	2019	2018	2017	2016	2015	2014
Total pension liability (Dollar amounts in thousands)						
Service cost	\$ 12,612	\$ 11,785	\$ 11,556	\$ 11,102	\$ 10,339	\$ 9,184
Interest	47,454	45,537	43,670	42,294	41,924	38,949
Changes of benefit terms	-	-	-	-	-	-
Differences between expected and actual experience	(573)	3,521	2,210	(1,552)	(14,630)	3,679
Changes of assumptions	10,153	-	-	-	-	18,028
Benefit payments, including refunds of member contributions	(30,098)	(31,973)	(33,129)	(33,868)	(31,520)	(28,823)
Net change in total pension liability	39,548	28,869	24,309	17,976	6,112	41,016
Total pension liability - beginning	652,014	623,144	598,836	580,860	574,748	533,731
Total pension liability - ending (a)	\$ 691,562	\$ 652,014	\$ 623,144	\$ 598,836	\$ 580,860	\$ 574,748
Plan fiduciary net position						
Contributions - employer	17,637	15,704	14,664	14,591	15,122	15,899
Contributions - member	3,652	3,524	3,441	3,257	3,050	2,778
Net investment income	75,388	(25,208)	77,992	33,899	(7,744)	22,688
Benefit payments, including refunds of member contributions	(30,098)	(31,973)	(33,129)	(33,868)	(31,520)	(28,823)
Administrative expense	(522)	(430)	(448)	(428)	(436)	(423)
Net change in plan fiduciary net position	66,058	(38,382)	62,520	17,451	(21,528)	12,119
Plan fiduciary net position - beginning	509,828	548,211	485,690	468,239	489,767	477,648
Plan fiduciary net position - ending (b)	\$ 575,887	\$ 509,828	\$ 548,211	\$ 485,690	\$ 468,239	\$ 489,767
County's net pension liability - ending (a)-(b)	\$ 115,675	\$ 142,185	\$ 74,933	\$ 113,146	\$ 112,621	\$ 84,981
Plan fiduciary net position as a percentage of the total pension liability	83.3%	78.2%	88.0%	81.1%	80.6%	85.2%
Covered payroll	\$ 51,011	\$ 48,728	\$ 46,954	\$ 46,228	\$ 43,838	\$ 40,476
County's net pension liability as a percentage of covered payroll	226.8%	291.8%	159.6%	244.8%	256.9%	210.0%
Expected average remaining service years of all participants	6	6	6	6	5	5

Notes to Schedule:

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- This schedule is presented to illustrate the requirement to show information for 10 years. However, until 10-year trend is compiled, pension plans should present information for those years for which data is available.
- There are no benefit changes reflected in the current schedule.
- For 2019, the expected rate of investment return was reduced from 7.5% to 7.45% and other assumptions were changed to reflect results of the 2018 experience study.
- The following assumptions were changed: interest rate, mortality, retirement rates, turnover rates, and disability rates.
Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.
- Covered Payroll does not include pay for members in DROP.

Anne Arundel County Retirement and Pension System

Required Supplementary Information

Schedule of Changes in the Net Pension Liability and Related Ratios-Detention Officers' and Deputy Sheriffs' Retirement Plan

For Years Ended December 31

	2019	2018	2017	2016	2015	2014
Total pension liability (Dollar amounts in thousands)						
Service cost	\$ 4,147	\$ 4,533	\$ 4,658	\$ 4,461	\$ 4,634	\$ 4,602
Interest	14,632	13,836	12,912	12,281	11,401	10,301
Changes of benefit terms	-	-	-	-	4,635	-
Differences between expected and actual experience	1,010	1,938	2,244	(1,678)	(2,558)	2,322
Changes of assumptions	1,348	-	-	-	-	3,494
Benefit payments, including refunds of member contributions	(8,610)	(8,162)	(6,821)	(6,485)	(6,279)	(5,819)
Net change in total pension liability	12,528	12,145	12,993	8,579	11,833	14,900
Total pension liability - beginning	200,706	188,562	175,569	166,990	155,156	140,256
Total pension liability - ending (a)	<u>\$ 213,234</u>	<u>\$ 200,706</u>	<u>\$ 188,562</u>	<u>\$ 175,569</u>	<u>\$ 166,990</u>	<u>\$ 155,156</u>
Plan fiduciary net position						
Contributions - employer	7,600	7,282	7,000	6,689	6,371	6,111
Contributions - member	1,402	1,352	1,354	1,316	1,317	1,298
Net investment income	19,918	(6,825)	19,607	8,159	(1,919)	4,944
Benefit payments, including refunds of member contributions	(8,610)	(8,162)	(6,821)	(6,485)	(6,279)	(5,819)
Administrative expense	(135)	(108)	(109)	(100)	(98)	(96)
Net change in plan fiduciary net position	20,174	(6,461)	21,030	9,579	(608)	6,438
Plan fiduciary net position - beginning	134,908	141,369	120,339	110,760	111,368	104,930
Plan fiduciary net position - ending (b)	<u>\$ 155,083</u>	<u>\$ 134,908</u>	<u>\$ 141,369</u>	<u>\$ 120,339</u>	<u>\$ 110,760</u>	<u>\$ 111,368</u>
County's net pension liability - ending (a)-(b)	<u>\$ 58,151</u>	<u>\$ 65,798</u>	<u>\$ 47,193</u>	<u>\$ 55,230</u>	<u>\$ 56,230</u>	<u>\$ 43,788</u>
Plan fiduciary net position as a percentage of the total pension liability	72.7%	67.2%	75.0%	68.5%	66.3%	71.8%
Covered payroll	\$ 22,057	\$ 19,573	\$ 19,790	\$ 19,801	\$ 19,386	\$ 19,776
County's net pension liability as a percentage of covered payroll	263.6%	336.2%	238.5%	278.9%	290.1%	221.4%
Expected average remaining service years of all participants	3	3	3	3	4	4

Notes to Schedule:

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- 2 This schedule is presented to illustrate the requirement to show information for 10 years. However, until 10-year trend is compiled, pension plans should present for those years for which data is available.
- 3 There are no benefit changes reflected in the schedule for the current year.
- 4 For 2019, the expected rate of investment return was reduced from 7.5% to 7.45% and other assumptions were changed to reflect results of the 2018 experience study.
- 5 The following assumptions were changed: interest rate, mortality, retirement rates, turnover rates, and disability rates.
Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.
- 6 Covered Payroll does not include pay for members in DROP.

Schedule of Investment Returns

<u>Year Ended</u>	<u>Annual Money-weighted Rate of Return</u> <u>Net of Investment Expenses</u>
2014	4.5%
2015	(1.8%)
2016	6.2%
2017	15.7%
2018	(4.9%)
2019	14.5%

Note: Money-weighted results for the required 10-year timeframe will be added as available.
The 2016 money-weighted return was revised due to a software error, which has been corrected.
Source: New England Pension Consultants, LLC

Anne Arundel County Retirement and Pension System
Required Supplementary Information
Schedule of Employer's Contributions - Employees' Retirement Plan
For the Last Ten Years Ended December 31

(Dollars in thousands)

	<i>2019</i>	<i>2018</i>	<i>2017</i>	<i>2016</i>	<i>2015</i>	<i>2014</i>	<i>2013</i>	<i>2012</i>	<i>2011</i>	<i>2010</i>
Actuarially determined contribution	\$ 29,637	\$ 27,033	\$ 25,654	\$ 25,810	\$ 25,655	\$ 24,426	\$ 22,362	\$ 19,824	\$ 18,186	\$ 17,284
Contributions in relation to the actuarially determined contribution	<u>29,637</u>	<u>27,033</u>	<u>25,654</u>	<u>25,810</u>	<u>25,630</u>	<u>24,451</u>	<u>22,362</u>	<u>19,824</u>	<u>18,186</u>	<u>17,284</u>
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 25</u>	<u>\$ (25)</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
Covered payroll	\$ 138,428	\$ 134,892	\$ 138,239	\$ 130,313	\$ 127,827	\$ 127,091	\$ 115,809	\$ 116,025	\$ 120,416	\$ 133,498
Contributions as a percentage of covered payroll	21.41%	20.04%	18.56%	19.81%	20.05%	19.24%	19.31%	17.09%	15.10%	12.95%

Notes to Schedule

Valuation Date: Actuarially determined contribution amounts are calculated as of each January 1 for the upcoming County fiscal year beginning July 1. Actuarial valuations are performed every year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Projected Unit Credit
Amortization method	Level percentage of payroll, closed, increasing 3.0% per year.
Remaining amortization period	Periods range from 14 to 23 years. Starting with new bases in 2014, assumption changes and gains and losses are amortized over 20 years and Plan changes are amortized over the average future service of the active population at the time of the change.
Asset valuation method	5-year smoothed market.
Inflation	3.00%
Salary increases	Rates vary by participant age.
Investment rate of return	7.45% Net of pension plan investment expense, including inflation.
Retirement age	Rates vary by participant age and service.
Mortality	RP-2014 Blue Collar Mortality T table for males and females projected generationally using scale MP-2018.

Anne Arundel County Retirement and Pension System
Required Supplementary Information
Schedule of Employer's Contributions - Police Service Retirement Plan
For the Last Ten Years Ended December 31

(Dollars in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	\$ 23,094	\$ 21,934	\$ 20,931	\$ 20,411	\$ 19,560	\$ 18,870	\$ 17,746	\$ 15,530	\$ 14,153	\$ 13,696
Contributions in relation to the actuarially determined contribution	<u>23,094</u>	<u>21,934</u>	<u>20,931</u>	<u>20,411</u>	<u>19,560</u>	<u>18,870</u>	<u>17,746</u>	<u>15,530</u>	<u>13,793</u>	<u>14,056</u>
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 360</u>	<u>\$ (360)</u>
Covered payroll (Note-Excluding members in DROP)	\$ 53,035	\$ 48,322	\$ 45,989	\$ 44,894	\$ 43,879	\$ 42,960	\$ 41,714	\$ 40,522	\$ 41,335	\$ 42,449
Contributions as a percentage of covered payroll	43.54%	45.39%	45.51%	45.46%	44.58%	43.92%	42.54%	38.32%	33.37%	33.11%

Notes to Schedule

Valuation Date: Actuarially determined contribution amounts are calculated as of each January 1 for the upcoming County fiscal year beginning July 1. Actuarial valuations are performed every year.

Note: "Covered payroll" since 2014 has been changed to reflect new GASB language.

Methods and assumptions used to determine contribution rates:

Actuarial cost method Projected Unit Credit

Amortization method Level percentage of payroll, closed, increasing 3.0% per year.

Remaining amortization period Periods range from 14 to 23 years. Starting with new bases in 2014, assumption changes and gains and losses are amortized over 20 years and Plan changes are amortized over the average future service of the active population at the time of the change.

Asset valuation method 5-year smoothed market.

Inflation 3.00%

Salary increases Rates vary by participant age.

Investment rate of return 7.45% Net of pension plan investment expense, including inflation.

Retirement age Rates vary by participant age and service.

Mortality RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A five-year set forward is used for post-disability mortality.

Other Employer contributions for calendar 2010 are greater than 100.0% of the Actuarially Determined Contribution due to 6/30 fiscal year revisions. Calendar 2011 was reduced for the revisions.

Anne Arundel County Retirement and Pension System
Required Supplementary Information
Schedule of Employer's Contributions - Fire Service Retirement Plan
For the Last Ten Years Ended December 31

(Dollars in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	\$ 17,637	\$ 15,704	\$ 14,664	\$ 14,591	\$ 15,122	\$ 15,899	\$ 16,152	\$ 15,238	\$ 14,395	\$ 14,213
Contributions in relation to the actuarially determined contribution	<u>17,637</u>	<u>15,704</u>	<u>14,664</u>	<u>14,591</u>	<u>15,122</u>	<u>15,899</u>	<u>16,152</u>	<u>15,238</u>	<u>13,960</u>	<u>14,649</u>
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 435</u>	<u>\$ (436)</u>
Covered payroll Excluding members in DROP	\$ 51,011	\$ 48,728	\$ 46,954	\$ 46,228	\$ 43,838	\$ 40,476	\$ 44,951	\$ 43,362	\$ 45,673	\$ 47,841
Contributions as a percentage of covered payroll	34.57%	32.23%	31.23%	31.56%	34.50%	39.28%	35.93%	35.14%	30.57%	30.62%

Notes to Schedule

Valuation Date: Actuarially determined contribution amounts are calculated as of each January 1 for the upcoming County fiscal year beginning July 1. Actuarial valuations are performed every year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Projected Unit Credit.
Amortization method	Level percentage of payroll, closed, increasing 3.0% per year.
Remaining amortization period	Periods range from 14 to 23 years. Starting with new bases in 2014, assumption changes and gains and losses are amortized over 20 years and Plan changes are amortized over the average future service of the active population at the time of the change.
Asset valuation method	5-year smoothed market.
Inflation	3.00%
Salary increases	Rates vary by participant age.
Investment rate of return	7.45% Net of pension plan investment expense, including inflation.
Retirement age	Rates vary by participant age and service.
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A five-year set forward is used for post-disability mortality.
Other	Employer contributions for calendar 2010 are greater than 100.0% of the Actuarially Determined Contribution due to 6/30 fiscal year revisions. Calendar 2011 was reduced for the revisions.

Anne Arundel County Retirement and Pension System

Required Supplementary Information

Schedule of Employer's Contributions - Detention Officers' and Deputy Sheriffs' Retirement Plan

For the Last Ten Years Ended December 31

(Dollars in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	\$ 7,600	\$ 7,282	\$ 7,000	\$ 6,689	\$ 6,371	\$ 6,111	\$ 5,600	\$ 5,141	\$ 4,994	\$ 4,789
Contributions in relation to the actuarially determined contribution	<u>7,600</u>	<u>7,282</u>	<u>7,000</u>	<u>6,689</u>	<u>6,371</u>	<u>6,111</u>	<u>5,600</u>	<u>5,141</u>	<u>4,876</u>	<u>4,907</u>
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 118</u>	<u>\$ (118)</u>
Covered payroll Excluding members in DROP	\$ 22,057	\$ 19,573	\$ 19,790	\$ 19,801	\$ 19,386	\$ 19,776	\$ 18,133	\$ 17,897	\$ 18,761	\$ 19,310
Contributions as a percentage of covered payroll	34.46%	37.20%	35.37%	33.78%	32.86%	30.90%	30.88%	28.73%	25.99%	25.41%

Notes to Schedule

Valuation Date: Actuarially determined contribution amounts are calculated as of each January 1 for the upcoming County fiscal year beginning July 1. Actuarial valuations are performed every year.

Note: "Covered payroll" since 2014 has been changed to reflect new GASB language.

Methods and assumptions used to determine contribution rates:

Actuarial cost method Projected Unit Credit.

Amortization method Level percentage of payroll, closed, increasing 3.0% per year.

Remaining amortization period Periods range from 3 to 23 years. Starting with new basis in 2014, assumption changes and gains/losses are amortized over 20 years and Plan changes are amortized over the average future service of the active population at time of the change.

Asset valuation method 5-year smoothed market.

Inflation 3.00%

Salary increases Rates vary by participant age.

Investment rate of return 7.45% Net of pension plan investment expense, including inflation.

Retirement Age Rates vary by participant age and service.

Mortality RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018.
A five-year set forward is used for post-disability mortality.

Other Employer contributions for calendar 2010 are greater than 100.0% of the Actuarially Determined Contribution due to 6/30 fiscal year revisions. Calendar 2011 was reduced for the revisions.

1 **Changes in Actuarial Methods and Assumptions**

There were no method or assumption changes since the prior valuation. There were no Plan amendments that affect benefits since the prior valuation for any of the four Plans.

2 **Significant Legislative Changes 2014 to 2019**

Legislative changes are listed in the General Description of the System in the Notes to the Basic Financial Statements.

Anne Arundel County Retirement and Pension System
Supplementary Schedules
For the Year Ended December 31, 2019

Schedule of Administrative Expenses

Professional Services

Actuarial	\$	322,058
Benefit payment processing		74,842
Insurance service fees		32,572
Audit		44,653
Investment consulting fees		600,240
Legal counsel		50,047
Misc. Fees/Other Consultants		-
		<u>1,124,412</u>

Travel and Entertainment

Travel & meals		5,635
		<u>5,635</u>

Miscellaneous: County paid

Supplies	13,082
Postage	17,998
Printing	1,102
Medical evaluations	15,045
Training & memberships	-
Indirect costs paid to County	620,400
Legal notices	343
	<u>667,970</u>

Miscellaneous: System paid

Prudential administration	3,960
Tax withholding expenses	25,340
	<u>29,300</u>
Total Administrative Costs	<u><u>\$ 1,827,317</u></u>

Schedule of Investment Expenses

Management Fees

Aetna/ING Investment Mgmt	\$	417,779
Apollo		388,179
Bridgewater	4,121,512	
Causeway		795,077
Chartwell Investment Partners		418,976
Clarion Lion Real Estate	1,019,612	
Crescent Mezzanine (TCW)		85,095
Dupont Capital Management		27,827
EIG Energy		333,389
Entrust Special Opportunities		76,761
HRJ Special Opportunities		6,580
Lexington		376,685

Management Fees (continued)

Loomis Sayles Sr. Loan Fnd	342,845
Newstone Partners Combined	70,292
Penn Capital	321,756
Private Advisors	348,030
Quellos Private Capital	85,463
Siguler Guff Combined	-
Southeastern Asset Mgmt, Inc.	408,267
State Street Global Advisors	19,015
VOYA-ING	575,825
Wedge Capital Management	547,155
Western Asset Management	239,325
Westwood Management Company	407,517
	<u>11,432,962</u>

Custodial Fees

State Street Bank & Trust	<u>403,002</u>
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Total Investment Expense \$ 11,835,964

Schedule of Payments to Consultants

Company

Fee

Aetna	\$	32,572
ADP		74,842
Bolton Partners, Inc.		322,058
CliftonLarsonAllen		44,653
New England Pension Consultants		600,240
Other		50,047
		<u><u>\$ 1,124,412</u></u>

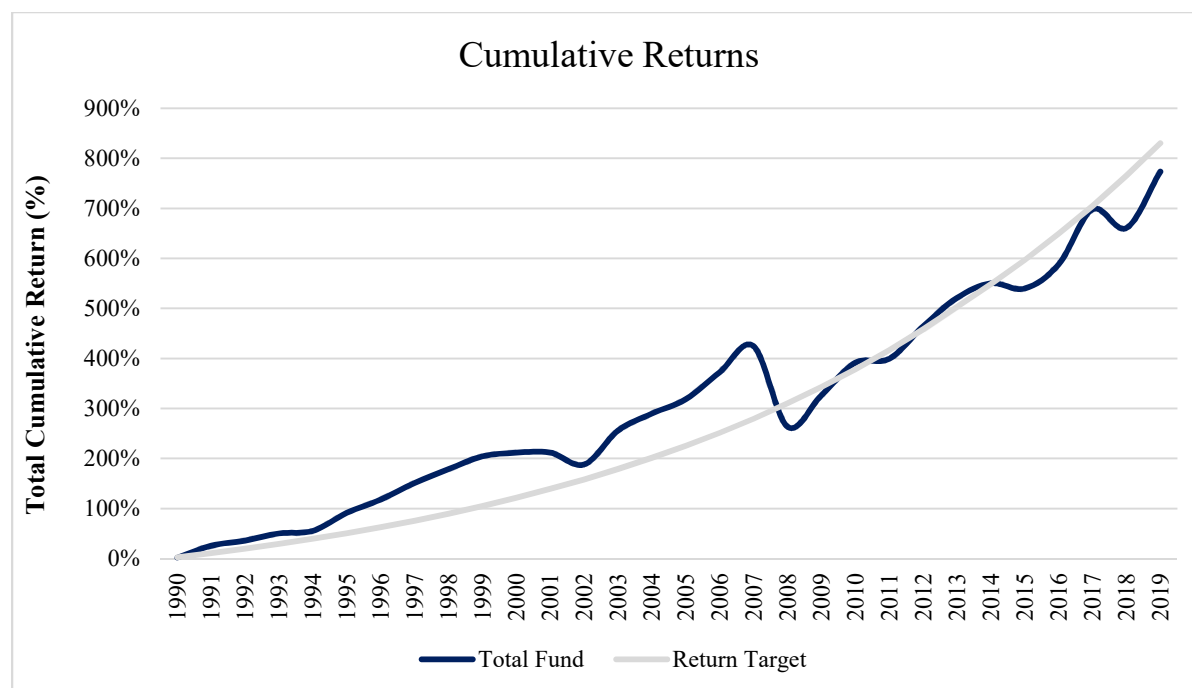
Nature of Service

Insurance Services
Benefit Payment Processing
Actuarial Services
Audit Services
Investment Consulting Services
Legal Services & Miscellaneous

Investment Section

INTRODUCTION:

The following is a review of investment activity of the System with discussion and comparisons to general investment market trends. NEPC, LLC (NEPC), the Investment Advisor, prepared this review using information provided by State Street Bank, the Custodian Bank. The following table illustrates the System's cumulative, net-of-fee, returns in relation to its actuarially assumed rate of return: Please note that due to the timing of the NEPC analysis, the results may vary to the audited Financial Statement and other disclosures.



*Return Target is 8% from inception through February 2014, 7.5% through December 2018, and 7.45% thereafter.

Fiscal year 2019 was the twenty first consecutive year the System's investment portfolio has been overseen by the Board of Trustees. NEPC continued to serve as the System's pension and investment consultant. In 2019, the System did not add any new investment managers, but made \$45 million in private equity commitments, with \$25 million to PIMCO Private Income Fund and \$20 million to Private Advisors Small Company Private Equity Fund IX.

MARKET COMMENTARY:

GLOBAL EQUITY MARKETS

First Quarter 2019

In the US, growth stocks led the way with gains of up to 16.1%. The MSCI ACWI Index rallied 12.2%, with the technology sector up 18.9%. The MSCI China A International Index returned 31% in the first quarter, recovering from losses of 31.8% in 2018. During the same period, the HFRI Equity Hedge Index gained 7.7%, its strongest quarterly return since 2009. Emerging Asia hedge funds were up 10.4% while those focused on China gained 14.9%; strategies concentrating on North America and Europe lagged the broader index with returns of 6.6% and 2.9%, respectively. Within sectors, hedge funds focusing on healthcare led performance while technology lagged. Capital flows from hedge funds indicate more cautious positioning with net selling in most cyclical sectors during the quarter; within regions, the positioning was more aggressive with inflows into emerging markets in Asia, especially China. The quarter saw a 4.1% fall in earnings from a year earlier for S&P 500 companies, a first since 2016, according to data from FactSet. These estimates put the S&P 500 forward price-to-earnings ratio at about 16.7, slightly above the five-year average of 16.4 and the 10-year average of 14.7. We continue to monitor potential wage pressures on profit margins, and ultimately, corporate earnings, amid declining unemployment.

Second Quarter 2019

In the US, large-cap financials led the charge with returns of 8.4% in the second quarter. The MSCI ACWI Index increased 3.6%, with financials up 6.6%; energy was the only outlier, losing 0.8%. During the same period, the HFRI Equity Hedge Index gained 1.7%. There was a wide dispersion in the performance of emerging markets hedge funds with those concentrating on India and China taking the biggest hits, losing 1.5% and 1.6%, respectively; strategies focused on Eastern Europe and Latin America led with returns of 7.2% and 4.4%, respectively. Earnings for S&P 500 companies for the second quarter are estimated to fall 3.0% from a year ago; this forecast comes on the back of a 4.1% fall in the first quarter, according to FactSet data. The last time around earnings were down two consecutive quarters was in 2016. We continue to closely monitor growth estimates and valuation multiples. In private equity, fundraising totaled \$111.5 billion in the second quarter, just shy of the \$113.1 billion raised in the previous quarter, and lower than the quarterly one-, three- and five-year averages, according to data provider Preqin. Additionally, the number of funds raised, at 267, was the lowest since 2013. While the current pace of fundraising is on track to match the total dollar amount raised last year, the number of funds is expected to shrink by a fourth at the present rate. For the three months ended June 30, the value of US buyouts—a combination of confirmed and yet-to-close deals—rebounded from the first quarter to \$160.4 billion as transactions totaling \$2.5 billion or more accounted for 26% of deal activity, according to data from PitchBook.

Third Quarter 2019

US equities were a mixed bag in the third quarter with the S&P 500 Index gaining 1.7% and the small-cap Russell 2000 Index losing 2.4%. There was a sharp reversal of growth and value strategies across the capital spectrum in the final month of the quarter with value outperforming growth by 3.6% and 5.9% across large and small caps, respectively. The reversal fueled losses in technology and healthcare hedge fund strategies of 1.5% and 2.5%, respectively. NEPC continues to recommend a balanced equity exposure across value and growth strategies globally. International stocks were increasingly volatile for the three months ended September 30 amid concerns around the global fallout from the ongoing trade war between the United States and China. The MSCI EAFE Index posted a modest loss of 1.1% as gains from defensive sectors, such as utilities and consumer staples, offset losses from cyclical sectors such as energy and materials. Japanese equities recorded gains of 3.1%, while European stocks were in the red at 1.8%; emerging market equities and China were harder hit, losing 4.2% and 4.7%, respectively.

Fourth Quarter 2019

Equities ended 2019 in a blaze of glory with emerging markets leading the way with fourth-quarter returns of 11.8%, bolstered by a trade pact between the United States and China; non-US developed market stocks were up 8.2% and US small-cap equities gained 9.9% during the same period. In the US, growth outperformed value by 3.2%, in line with a trend established in the aftermath of the financial crisis, with the annualized difference totaling 3.6% over the last 10 years. We continue to recommend a balanced exposure across value and growth stocks. While small caps edged out large caps for the three months ended December 31, large caps carried the year with returns of 31.5%, according to the S&P 500 Index, trouncing the Russell 2000 Index's gains of 25.4%. Outside the US, developed market small caps outperformed large caps by 3% with returns of 24.9%. Elsewhere, private equity fundraising totaled \$182 billion globally in the fourth quarter, bringing the total for the year to \$614 billion, in line with the past three-year average of \$603 billion, according to data from Preqin. Buyout activity in the fourth quarter stood at \$140 billion compared to an average of \$176 billion over the prior four quarters, according to PitchBook data. Additionally, buyout exit activity slowed for the three months ended December 31, totaling \$73 billion compared to an average of \$88 billion in the earlier four quarters. Buyout activity totaled \$318 billion, the lowest since 2012. On the other hand, venture capital deal activity ticked up in the fourth quarter to \$34 billion, up \$2 billion from the previous quarter. Venture capital exit activity in the same period stood at \$19 billion, down from \$43 billion in the third quarter; however, for the year, venture capital-backed exit value hit a 10-year high of \$256 billion, according to PitchBook.

2019 Summary of Results – Global Equity

For comparison, the following table illustrates equity index returns across geographies, economic regions, and styles for the year and trailing time periods:

Global Equity Market Returns as of 12/31/2019				
Global Equity	Quarter	1 Year	3 Yrs	5 Yrs
MSCI ACWI	9.0%	26.5%	12.4%	8.4%
US Equity	Quarter	1 Year	3 Yrs	5 Yrs
S&P 500	9.1%	31.5%	15.3%	11.7%
Russell 1000 Growth	10.6%	36.2%	20.4%	14.6%
Russell 1000 Value	7.4%	26.4%	9.7%	8.3%
Russell 2000	9.9%	25.4%	8.6%	8.2%
Russell 2000 Growth	11.4%	28.4%	12.5%	9.3%
Russell 2000 Value	8.5%	22.3%	4.8%	7.0%
International Equity	Quarter	1 Year	3 Yrs	5 Yrs
MSCI EAFE	8.2%	21.9%	9.5%	5.7%
MSCI EAFE Hedged USD	5.2%	21.6%	7.6%	6.7%
MSCI EAFE Small Cap	11.5%	24.9%	10.9%	8.8%
MSCI Europe	8.8%	23.7%	9.7%	5.0%
MSCI Japan	7.6%	19.5%	8.9%	7.7%
MSCI Emerging Markets	11.8%	18.3%	11.5%	5.6%
MSCI Emerging Markets Small Cap	9.5%	11.5%	6.7%	3.0%
Alternative	Quarter	1 Year	3 Yrs	5 Yrs
HFRI Equity Hedge	5.9%	13.9%	6.2%	4.6%
HFRI Emerging Markets	5.1%	11.7%	5.9%	4.2%
HFRI ED: Activist	7.7%	18.3%	3.8%	4.5%
HFRI ED: Merger Arbitrage	2.4%	6.8%	4.8%	4.3%

GLOBAL FIXED INCOME MARKETS

First Quarter 2019

In fixed income, spreads narrowed across the board amid an increased appetite for risk, pausing only momentarily with the inversion of the Treasury yield curve. Spreads on high-yield debt tightened to around 400 basis points in the first quarter from their peak of 530 basis points at the end of 2018; the Bloomberg Barclays High Yield Index gained 7.3% for the three months ended March 31. During the same period, risk premiums on investment-grade credit narrowed about 30 basis points to 120 basis points; the Bloomberg Barclays Aggregate Index rose 2.9% and the Bloomberg Barclays US Long Treasury Index gained 4.7% in the first quarter. Leveraged loans also ended the quarter in the black with returns of 4%, according to the S&P LSTA Leveraged Loan Index. Hedge funds also started the year on a strong note with distressed and restructuring strategies up 3.3% in the first quarter, according to the HFRI ED: Distressed/Restructuring Index; the HFRI ED: Credit Arbitrage Index gained 5.2%.

Second Quarter 2019

In fixed income, spreads for investment-grade credit were little changed, at 119 basis points, amid steady demand. In contrast, spreads on the riskier CCC-rated segment of high-yield debt widened as much as 70 basis points, underscoring investor concerns around credit risk associated with the late stage of an economic cycle. The Bloomberg Barclays Aggregate and the Bloomberg Barclays US Long Treasury indexes were up 3.1% and 6.0%, respectively, in the second quarter. The Bloomberg Barclays High Yield Index gained 2.5% and leveraged loans returned 1.6%, according to the S&P LSTA Leveraged Loan Index.

Net outflows continued for high-yield and levered loan funds, while investment-grade funds experienced net inflows during the quarter. In the same period, credit hedge funds maintained their positive trajectory with the HFRI ED: Credit Arbitrage Index gaining 3.1% and the HFRI ED: Distressed/Restructuring Index up 1.8%. Outside the US, emerging market debt rallied with local currency-denominated debt posting a return of 5.6% for the quarter. External emerging market sovereign debt continued its strong run, returning 4.4% for the quarter. Valuations and fundamentals remain favorable for emerging economies given the Federal Reserve's more dovish stance.

Third Quarter 2019

In this late stage of the US economic cycle, investors are favoring higher-quality credit and safe-haven fixed-income assets. Long-only high-yield and levered-loan funds continued to see net outflows, while investment-grade funds witnessed net inflows in the third quarter. US bond markets were in the black for the quarter with the Bloomberg Barclays Aggregate posting gains of 2.3%, the Bloomberg Barclays High Yield up 1.3%, and S&P LSTA Leveraged Loan Index

Anne Arundel County Retirement and Pension System
Investment Review
For the Year Ended December 31, 2019

returning 1.3%; the Bloomberg Barclays US Long Treasury gained 7.9% in the third quarter underscoring the demand for safe-haven investments. Issuance so far this year in the high-yield market has surpassed that of 2018, with nearly 50% of the new issuance in double-B rated bonds. To this end, we advocate caution in this segment given the tight spread and high issuance levels. Within hedge funds, performing credit was positive with the HFRI ED: Credit Arbitrage Index gaining 1.4%, but distressed credit was in the red with the HFRI ED: Distressed/Restructuring Index down 1.6% due to the volatility in the energy sector. Outside the US, emerging market debt (EMD) posted mixed results in the third quarter. Local currency-denominated debt posted losses related to currency weakness but was in the black for the trailing twelve-month period. External EMD sovereign debt and corporate bonds were up during the quarter. The fundamentals for emerging markets are still favorable, but volatility remains elevated.

Fourth Quarter 2019

Fixed-income securities ended 2019 in the black, reversing declines from the year earlier. Spreads on high-yield credit narrowed for most part of the year, but segments in the high-yield and bank loan market showed signs of stress towards the end of 2019. On a risk-adjusted basis, high-yield and bank loan CCC-bonds posted their worst performance since the financial crisis. US credit ended the year up 13.7%, according to the Bloomberg Barclays Aggregate Index, while the Bloomberg Barclays High Yield Index gained 14.3% in 2019; the S&P LSTA Leveraged Loan Index returned 10.6% during the same period. Meanwhile, credit hedge funds had a positive quarter, underscoring the flight to quality as investors gravitated towards higher-rated assets while distressed strategies lagged. The HFRI Credit Index was up 6.7% in 2019, while the HFRI ED: Distressed/Restructuring Index returned 2.9% last year. Outside the US, emerging market debt performed robustly but concerns were elevated due to heightened geo-political risks and an overall slowdown in global growth. The JPM EMBI Index was up 15%, while the JPM GBI Index was in the black, gaining 13.4% last year.

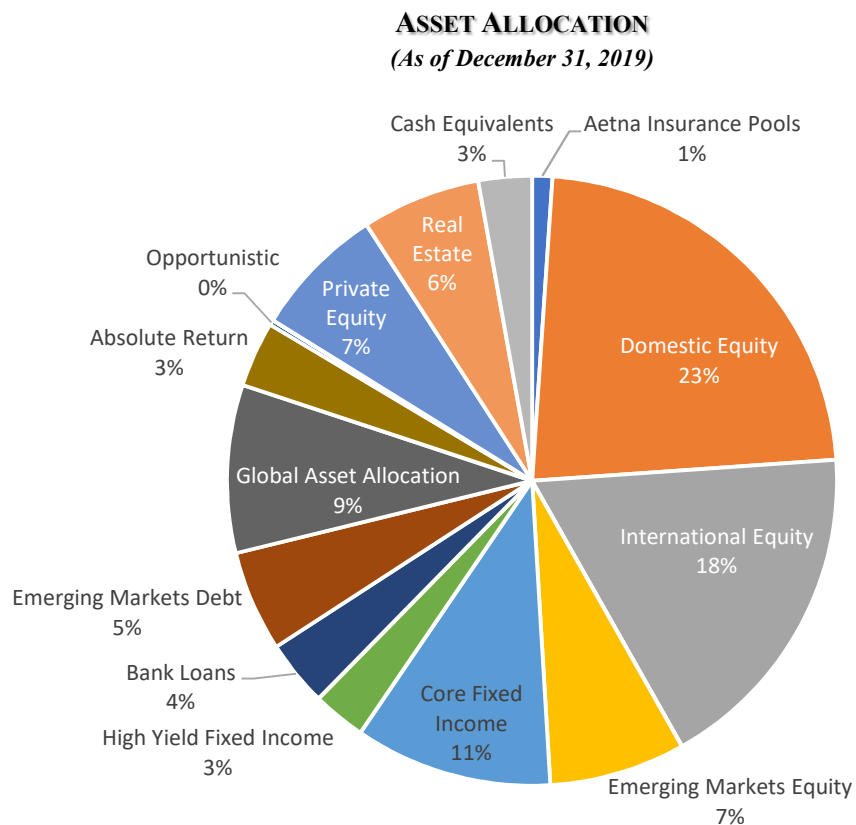
2019 Summary of Results — Global Fixed Income

For comparison, the following table illustrates fixed income index returns and yields across regions, countries, and styles for the year and trailing time periods:

Global Fixed Income Market Returns as of 12/31/2019				
Global Fixed Income	Quarter	1 Year	3 Yrs	5 Yrs
BC Global Aggregate	0.5%	6.8%	4.3%	2.3%
JPM EMBI Global Diversified	1.8%	15.0%	6.7%	6.2%
JPM GBI-EM Global Diversified	5.2%	13.4%	7.0%	2.8%
Domestic Fixed Income	Quarter	1 Year	3 Yrs	5 Yrs
BC Aggregate Bond	0.2%	8.7%	4.0%	3.0%
BC Municipal Bond	0.7%	7.5%	4.7%	3.5%
BC TIPS	0.8%	8.4%	3.3%	2.6%
BC US Treasury	-0.8%	6.8%	3.3%	2.3%
BC US Long Treasury	-4.1%	14.8%	6.9%	4.1%
BC MBS	0.7%	6.3%	3.2%	2.6%
BC US Credit	1.1%	13.7%	5.7%	4.4%
BC US Long Credit	1.2%	23.3%	8.9%	6.3%
BC High Yield	2.6%	14.3%	6.3%	6.1%
BC Muni High Yield	0.9%	10.6%	8.3%	5.9%
S&P LSTA Lev. Loan	2.3%	10.6%	4.3%	4.1%
BC T-Bills	0.5%	2.3%	1.7%	1.1%
Alternative	Quarter	1 Year	3 Yrs	5 Yrs
HFRI Credit Index	1.9%	6.7%	4.2%	4.0%
HFRI ED: Credit Arbitrage	3.2%	12.5%	6.9%	5.2%
HFRI ED: Distressed/Restructuring	-0.1%	2.9%	2.4%	2.6%
HFRI Relative Value	2.0%	7.6%	4.0%	3.9%

GROWTH OF ASSETS AND ASSET ALLOCATION:

As of December 31, 2019, the System's net assets stood at \$1.99 billion, up approximately \$211.02 million for the year. For the fiscal year, the System experienced \$66.08 million in net cash outflows and \$278.11 million in investment gains. At December 31, 2019, the System's assets were in compliance with Policy and were allocated as follows:



Note: Due to the timing of the NEPC analysis, the results may vary to the audited Financial Statements and other disclosures.

INVESTMENT PERFORMANCE:

For fiscal year ending December 31, 2019, the System's assets earned 14.8%, net of fees, above its actuarially assumed rate of 7.5%. This also brought the System's return since inception (September 1990) to 7.7%, net of fees. These returns were calculated using a time-weighted approach (i.e., compound interest).

The following table summarizes investment holdings as of December 31, 2019, displaying fair market value and percent of the total value compared with the prior year data:

	FY 2019		FY 2018	
	Fair Value	Percentage	Fair Value	Percentage
Cash Equivalents	\$56,507,955	2.8%	\$29,606,621	1.7%
Aetna Insurance Pools	\$21,384,914	1.1%	\$21,938,741	1.2%
Domestic Equity	\$454,540,840	22.8%	\$382,678,335	21.5%
International Equity	\$356,942,585	17.9%	\$287,414,213	16.1%
Emerging Markets Equity	\$143,791,836	7.2%	\$131,144,100	7.4%
Core Fixed Income	\$208,852,037	10.5%	\$153,328,484	8.6%
High Yield Fixed Income	\$56,185,574	2.8%	\$58,413,618	3.3%
Bank Loans	\$69,568,930	3.5%	\$73,920,807	4.2%
Emerging Markets Debt	\$106,398,148	5.3%	\$69,658,136	3.9%
Global Asset Allocation	\$177,437,631	8.9%	\$242,619,217	13.6%
Absolute Return	\$68,946,947	3.5%	\$64,016,456	3.6%
Opportunistic	\$5,598,621	0.3%	\$7,162,936	0.4%
Liquidating Composite	\$0	0.0%	\$6,260	0.0%
Real Estate	\$125,645,333	6.3%	\$121,825,222	6.8%
Private Equity	\$139,865,077	7.0%	\$136,317,892	7.7%
Total	\$1,991,666,428	100.0%	\$1,780,051,038	100.0%

Note: Due to the timing of the NEPC analysis, the results may vary to the audited Financial Statements and other disclosures.

The following table summarizes the System's net-of-fee returns by asset category and compares them to relevant benchmarks:

Anne Arundel County Pension Portfolio Holdings & Returns - Fiscal Year Ending 2019				
	FY Ending %	Trailing Period Returns ¹		
		Last Year	Last 3 Years	Last 5 Years
Total Equity Composite	48.0%	21.6%	10.2%	7.0%
Domestic Equity Composite	22.8%	26.9%	12.4%	9.4%
<i>S&P 500 Index</i>		31.5%	15.3%	11.7%
<i>Russell 2000</i>		25.5%	8.6%	8.2%
Int'l Equity Composite	17.9%	20.4%	8.0%	4.4%
<i>MSCI EAFE Index</i>		22.0%	9.6%	5.7%
Emerging Markets Equity Composite	7.2%	9.6%	8.9%	4.7%
<i>MSCI Emerging Markets Free Index</i>		18.4%	11.6%	5.6%
Total Fixed Income Composite	26.7%	10.3%	4.9%	3.9%
Core Fixed Composite	11.6%	9.2%	4.6%	3.8%
<i>BBgBarc US Aggregate Bond Index</i>		8.7%	4.0%	3.0%
Absolute Return Fixed Income Composite ²	3.5%	7.7%	4.0%	3.0%
<i>3-Month LIBOR +3% Index</i>		5.4%	5.1%	4.5%
High Yield Bond Composite	2.8%	13.3%	5.9%	5.4%
<i>BofA ML US BB-B Bond Index</i>		15.4%	6.6%	6.2%
Bank Loan Composite ³	3.5%	8.0%	3.6%	
<i>S&P/LSTA Leveraged BB Loan Index</i>		9.3%	4.0%	
Emerging Market Debt Composite	5.3%	15.2%	7.0%	4.1%
<i>EMD Blended Index⁴</i>		13.8%	6.7%	4.5%
Real Estate Composite	6.3%	6.4%	7.7%	9.2%
<i>NCREIF Property Index</i>		6.4%	6.7%	8.2%
Global Asset Allocation Composite	8.9%	11.7%	6.5%	4.8%
<i>91-Day T-Bills + 6% Index</i>		8.2%	7.7%	7.1%
Opportunistic Composite	0.3%	1.4%	0.8%	2.0%
<i>BBgBarc High Yield Index</i>		14.3%	6.4%	6.1%
Private Equity Composite⁵	7.0%	5.9%	11.1%	9.0%
<i>7.5% Return Index</i>		7.5%	7.5%	7.5%
Cash Equivalents Composite	2.8%	2.3%	1.8%	1.2%
<i>91-Day T-Bills Index</i>		2.1%	1.6%	1.1%
AAC TOTAL FUND	100.0%	14.8%	8.3%	6.1%

Notes:

¹Returns are time-weighted, net of fees, except for Private Equity.

²Inception Date of August 2014.

³Inception Date of July 2016.

⁴50% JPM EMBI Global Div + 25% JPM EMBI Global + 25% JPM Corporate EMBI Index.

⁵Returns are money-weighted (IRRs).

Anne Arundel County Retirement and Pension System
Investment Review
For the Year Ended December 31, 2019

The following table lists alphabetically lists all of the System's investment managers with their asset values, as of December 2019, describing each by service type:

Firm	Investment Service	Ending Market Value (December 31, 2019)
Aetna General	Annuity	\$21,384,914
BlackRock Fixed Income	Absolute Return Fixed Income	\$68,946,947
Bridgewater Associates (All-Weather)	Global Asset Allocation	\$118,514,615
Bridgewater Associates (Pure Alpha)	Global Asset Allocation	\$58,923,016
Causeway Capital Management	International Equity	\$137,463,716
Chartwell Investment Partners	Small Cap Growth Equity	\$50,120,418
Clarion Partners	Core Real Estate	\$125,645,333
Dimensional Fund Advisors	Emerging Markets Equity	\$143,791,836
Entrust Capital	High Yield Fixed Income	\$5,598,621
Lazard Asset Management	International Equity	\$129,859,138
Loomis Sayles & Company	Senior Bank Loans	\$69,568,930
PENN Capital Management	High Yield Fixed Income	\$56,185,574
PIMCO	Emerging Markets Fixed Income	\$106,398,148
Private Equity Composite	--	\$139,865,077
Segall, Bryant & Hamill	International Small Cap Equity	\$89,619,731
Southeastern Asset Management	Large Cap Value Equity	\$67,165,263
State Street Global Advisors	Large Cap Core Equity	\$55,521,182
Voya Financial (Equity)	Large Cap Growth Equity	\$134,821,297
Voya Financial (Fixed Income)	Core Fixed Income	\$83,679,941
Wedge Capital Management	Small Cap Value Equity	\$58,483,741
Western Asset Management	Core Fixed Income	\$125,172,096
Westwood	Large Cap Value Equity	\$88,428,939

*Sum of market values does not equal total plan assets due to the exclusion of liquidating managers and cash.

Investment Objectives

The Trustees of the Anne Arundel County Retirement System (System) seek to maintain the annual rate of pension contributions based on accepted actuarial practices, at a stable or declining percent of payroll. The Trustees also seek to maintain the funded ratio (market value of assets/actuarial value of benefits earned to date as measured by the Accrual Benefit Obligation) at a target level of 115% and in no event less than 100% in any given year. The System must remain capable of paying all benefits earned by employees. This principle is paramount and will not be compromised. Prudence is thus a mandatory factor in all decisions relating to the System. The disposition of the System's assets shall be made solely in the interest of the participants and their beneficiaries of the pension plan for exclusive purposes of providing benefits to such participants and their beneficiaries. Investments shall be made in a cost efficient manner, and reflect current industry best practices. The System return requirements are articulated in three separate ways:

- **Nominal Returns** – The actuarially required rate of return for the Fund is 7.45% annually, net of all fees and operating expenses. In order to achieve a buffer and have a somewhat higher likelihood of achieving the Fund's objective, the Board desires a net total return in excess of this 7.45% target.
- **Real Returns** – The Board is aware the preservation of purchasing power is driven by inflation. As the Consumer Price Index (CPI) is the most commonly accepted measure of inflation, The Board has defined its real rate of return target as the nominal return less CPI. With an actuarially assumed return rate of 7.45% (long-term) and an actuarially assumed CPI rate of 3.00% (long-term), the long-term, real return target is set at 4.45%.
- **Relative Returns** – Total return shall rank in the top half of the appropriate public fund universe. Risk-adjusted returns should also rank in the top half of the same universe. Returns for investment managers shall exceed their respective benchmarks, as well as rank in the top half of the appropriate universe of managers adhering to the same investment strategy.

The Board further recognizes that the return targets described herein may not be achieved in any single year. Instead, a longer-term horizon of 5-7 years shall be used in measuring the long-term success of the Fund. While the Board expects that returns will vary over time, the Fund shall have a risk tolerance consistent with that of other funds created for similar purposes, and the assets of the Fund shall be invested accordingly.

General Investment Policy

The System operates under the "Prudent Person" rule used herein, meaning that in investing, the governing authorities of the systems, funds and plans, shall exercise the judgment and care under the circumstances then prevailing, that an institutional investor of ordinary prudence, discretion, and intelligence exercises in the management of investments entrusted to it, not in regard to speculation, but in regard to the permanent disposition of funds, considering probable safety of capital as well as probable income.

Investments are made in full accordance with any and all applicable Maryland statutes, as well as any other applicable legislation or regulation, state, federal or otherwise. The roles and responsibilities of the Board of Trustees, the Investment Committee, the Investment Consultant, the Investment Managers and the Custodian are clearly defined. The Board has established a diversified portfolio to meet the System's return requirements. The table below summarizes the target asset allocation.

Asset Class	Market Value Target (%)	Minimum Exposure (%)	Maximum Exposure (%)
Equities	45	35	55
Domestic Large Cap	17	12	22
Domestic Small/Mid Cap	4	0	9
Established International (Lg Cap)	12	7	17
Established International (Sm Cap)	5	0	10
Emerging International Equity	7	0	12
Fixed Income	27	15	35
Core Fixed Income	11	5	16
Bank Loans	4	0	10
Domestic High Yield	4	0	10
Emerging Market Debt	5	0	10
Absolute Return Fixed Income	3	0	5
Alternative Assets	26	18	38
Private Markets	11	0	20
Real Estate	6	0	11
Risk Parity	9	5	15
Cash	2	0	10

The Chair of the Investment Committee reviews the asset allocation at least on a quarterly basis to determine if the asset allocation is consistent with the exposure ranges described herein. The Chair of the Investment Committee directs investment managers to transfer funds to rebalance the asset allocation as necessary with subsequent Board notification. The System shall strive to maintain a neutral bias with respect to Style Allocation (Growth versus Value) in its equity investments. As part of the normal rebalancing responsibilities, The Chair of the Investment Committee shall use appropriate judgment and care when rebalancing portfolios. Market conditions and transaction costs are considered.

For each separate account, investment managers must comply with the quality and diversification requirements stated in the investment policy. Investment managers have detailed reporting requirements and must certify policy compliance on a quarterly basis. Permissible derivative uses are hedging, creation of permitted market exposures, and management of country and asset allocation exposure.

Proxy Voting

The Board of Trustees delegates proxy voting responsibility to its investment managers. Investment managers are required to report to the Board on an annual basis, summarizing proxy voting over the previous fiscal year. The report must detail any changes that have occurred in the manager's proxy voting policies, and note any instances where proxies were not voted in accordance with the best interest of the System's beneficiaries.

Investment Manager Fees

The following table presents investment managers' fees paid by asset class.

<u>Asset Class</u>	<u>Assets Managed (Includes Cash)</u>	<u>Fees Paid</u>
Domestic equity	\$ 454,540,841	\$ 2,376,754
International equity	500,734,421	795,078
Domestic fixed income	250,926,600	903,926
Global assets	177,442,993	4,121,512
Other *	252,164,303	-
Private markets **	133,117,622	1,798,300
Real estate	125,645,333	1,019,612
Stable value insurance account	105,064,855	417,780
Total Investment Managers' Fees		11,432,962
Other Investment Service Fees:		
Custodial fees		403,002
Total Investment Expenses		\$ 11,835,964

* Fees net to fund assets. Not available as discrete amounts.

** Fees reported for a portion, but not all of private market accounts.

Brokerage Commissions

Broker's commissions on investment transactions, excluding mutual funds, for the year ended December 31, 2019 totaled \$207,469. Brokerage firms receiving more than \$6,000 in fees are listed below.

<u>Brokerage Firms</u>	<u>Fees Paid</u>	<u>Brokerage Firms</u>	<u>Fees Paid</u>
Liquidnet, Inc.	\$ 38,992	Morgan Stanley Co, Inc.	\$ 8,801
Jefferies and Company, Inc.	14,592	Instinet	7,593
J.P. Morgan Securities, LLC.	13,817	BTIG, LLC	6,808
Barclays Capital LE	9,882	Piper Jaffray & Co.	6,600
			107,085

The Investment Policy Statement requires that each manager shall provide an annual commission report to the Investment Committee and Investment Consultant within forty-five (45) days of the end of each calendar year. The report shall cover all trades executed during the prior year and should include a discussion of the firm's policy for selecting brokers, reviewing brokers, and negotiating brokerage commissions. This should include identification of any situations where the investment manager has a financial interest in brokers used to execute trades in the portfolio as well as a list of all broker-dealers used by the firm. Actual commission expenses are to be compared to the prior year. If the firm has a system for monitoring total transaction costs (commissions plus market impact), a copy of this analysis should be provided. If no such system is being used, the commission report should include a complete explanation of how the firm monitors selected brokers for best execution.

Anne Arundel County Retirement and Pension System
Investment Managers Guidelines and Exemptions as of December 31, 2019

<u>Manager Name</u>	<u>Asset Class</u>	<u>Long-term Benchmark</u>	<u>Style Benchmark</u>	<u>Peer Group Universe</u>	<u>Guideline Exemptions</u>
Aetna General	Domestic Fixed Income	Ryan Labs 5 Yr GIC	Ryan Labs 5 Yr GIC	All US Fixed Income Managers	None
Apollo Investment Fund VIII, L.P. Apollo Investment Fund IX, L.P.	Private Equity	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None
BlackRock	Absolute Return Fixed Income	Libor +3%	Libor + 3%	Absolute Return Fixed Income Managers	None
Bridgewater Associates, Inc.	Global Asset Allocation	T-Bills + 6%	T-Bills + 6%	Absolute Return Managers (low volatility HFOF managers)	None
Bridgewater Associates, Inc.	Hedge Fund	T-Bills + 6%	T-Bills + 6%	Absolute Return (Global Macro Managers)	None
Causeway Capital Management LLC	International Equity	MSCI EAFE	MSCI EAFE	International Developed Equity	None
Chartwell Investment Partners	U.S. Small Cap Growth Equity	Russell 2000 Index	Russell 2000 Growth	U.S. Small Cap Growth Equity	None
Clarion Partners	Real Estate	NCREIF Property Index	NCREIF Property Index	Real Estate Managers	None
Dimensional Fund Advisors, LP	Emerging Markets Equity	MSCI Emerging Markets Free Index	MSCI Emerging Markets Index (net div)	Emerging Markets Equity	None
DuPont Capital Management	Private Equity Fund of Funds	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None
EIG XV EIG XVI	Private Equity Fund of Funds	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None
Entrust	Opportunistic	Barclays High Yield	Barclays High Yield	Absolute Return Strategy Managers	None
HRJ Capital (Capital Dynamics)	Private Equity Distressed Debt	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None
Lazard Asset Management LLC	International Equity	MSCI EAFE-ND	MSCI EAFE	International Equity Managers	None
Lexington Partners VI-B Lexington Partners VII Lexington Partners VIII Lexington Partners IX	Private Equity Secondaries	7.5% Constant Return	7.5% Constant Return	Private Equity Managers	None
Loomis Sayles & Company, L.P.	Bank Loans	S&P LSTA US BB Ratings Loan Index	S&P LSTA US BB Ratings Loan Index	Bank Loan Managers	None
Newstone Capital Partners I Newstone Capital Partners II	Private Equity-Mezzanine Debt	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None

Anne Arundel County Retirement and Pension System
Investment Managers Guidelines and Exemptions as of December 31, 2019

Manager Name	Asset Class	Long-term Benchmark	Style Benchmark	Peer Group Universe	Guideline Exemptions
Penn Capital	US High Yield Fixed Income	BofA ML US High Yield BB-B ND	BofA ML US High Yield BB-B ND	High Yield Bond Managers	Note A
PIMCO	Emerging Market Debt	50% GBIEMGLBL./25% EMBI /25% CEMB	50% GBIEMGLBL./25% EMBI /25% CEMB	Emerging Market Debt Managers	None
Private Advisors Small Company Buyout Fund V Private Advisors Small Company Buyout Fund VI Private Advisors Coinvestment Fund LP	Private Equity - Small Buyout Fund of Funds	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None
Quellos Private Capital II, LP Quellos Private Capital III, LP	Private Equity Fund of Funds	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None
Segall, Bryant & Hamill	International Small Cap Equity	MSCI EAFE Small Cap Index	MSCI EAFE Small Cap Index	International Developed Equity Managers	None
Siguler Guff DOF III Siguler Guff DOF IV Siguler Guff DOF V	Private Equity Distressed Opportunities	7.5% Annualized Coupon Return	7.5% Annualized Coupon Return	Private Equity Managers	None
Southeastern Asset Management	U.S. Large Cap Value Equity	Russell 1000 Index	Russell 1000 Value Index	U.S. Large Cap Value Equity	Note B
State Street Global Advisors	U.S. Large Cap Equity	S&P 500 Index	S&P 500 Index	U.S. Large Cap Core Equity	None
TCW/Crescent Mezzanine Partners, LP IV TCW/Crescent Mezzanine Partners, LP V Crescent Mezzanine Partners, LP VI	Private Equity Mezzanine Debt	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None
VOYA Financial (Fixed Income)	Core Fixed Income	Barclays Capital Aggregate Bond Index	Barclays Capital Aggregate Bond Index	Core Fixed Income Managers	Note C
VOYA Financial	U.S. Large Cap Growth Equity	Russell 1000 Index	Russell 1000 Growth Index	U.S. Large Cap Growth Equity	None D
Warburg Pincus Private Equity XII, LP Warburg Pincus Global Growth	Private Equity - Growth Equity	7.5% Annualized Compound Return	7.5% Annualized Compound Return	Private Equity Managers	None
WEDGE Capital Management	US Small Cap Value Equity	Russell 2000 Index	Russell 2000 Value Index	US Small Cap Value Equity Managers	None
Western Asset Management	Core Plus Fixed Income	Barclays Capital Aggregate Bond Index	Barclays Capital Aggregate Bond Index	Core Fixed Income Managers	Note E
Westwood Management Corp.	U.S. Large Cap Value Equity	Russell 1000 Index	Russell 1000 Value Index	U.S. Large Cap Value Equity	None

Note A: 1. May hold up to 10% of the portfolio, at market value, in Senior Bank Loan Debt securities.

Note B: 1. May hold up to 10% of their portfolio in any one security.
2. May hold up to 30% of the portfolio in American Depositary Receipts (ADRs), which are stocks or convertibles of foreign companies that are publicly traded in the US.
3. Is exempt from being required to hold at least 25 stocks in their portfolio.
4. For securities held in the Anne Arundel County Pension and Retirement System portfolio, Southeastern may own up to 20% of the outstanding market capitalization of a given company across all of their portfolios. If Southeastern owns more than this 20% limit for any security within the Anne Arundel County Pension and Retirement System portfolio, the Investment Committee Chairman and Investment Consultant of the Anne Arundel County Pension and Retirement System must be notified immediately for approval to continue holding the security, which may or may not be granted, depending on prevailing conditions.
5. May hold up to 20% of the portfolio in cash and equivalents if market conditions warrant, but Board must be notified if cash goes above 20%.
6. May hold securities traded on U.S. exchanges or markets.

Note C: 1. May hold up to 5% of the portfolio, at market value, in Senior Bank Loan Debt securities.

Note D: 1. For the purposes of equitizing cash, Voya is permitted to invest in ETFs such as the iShares Russell 1000 Growth (Ticker: IWF). The objective of this policy allowance is to equitize residual cash holdings, not for speculation or market timing.

Note E: 1. Exempt from receiving at least two competitive offers on the same or similar securities prior to purchasing new issue mortgage back securities.
2. Permitted to invest in the securities referenced in Section A of the Anne Arundel County Retirement and Pension System Investment Policy Statement. In addition, Western Asset may hold investments in High yield Fixed Income, Emerging Market Debt, Emerging Market Debt Local Currency, and/or Bank Loans.

Largest Stock Holdings (By Fair Value)

Rank	Shares	Company	Fair Value
1	4,731	AMAZON.COM INC COMMON STOCK	\$ 8,742,131
2	53,323	MICROSOFT CORP COMMON STOCK	8,409,037
3	26,652	APPLE INC COMMON STOCK	7,826,360
4	36,102	FACEBOOK INC COMMON STOCK	7,409,936
5	31,524	VISA INC COMMON STOCK	5,923,360
6	428,306	CENTURYLINK INC COMMON STOCK	5,657,922
7	453,614	GENERAL ELECTRIC CO COMMON STOCK	5,062,332
8	43,477	MERCK& CO COMMON STOCK	3,954,233
9	14,964	INTUIT INC. COMMON STOCK	3,919,521
10	289,089	MATTEL INC COMMON STOCK	3,917,156

Note: This list does not include investments in stock investment pools
A complete list of portfolio holding is available upon request.

Largest Bond Holdings (By Fair Value)

Rank	Par	Description	Fair Value
1	905,000	MEREDITH CORP COMPANY GUAR 144A 02/26 6.875	940,929
2	839,000	PETROBRAS GLOBAL FINANCE COMPANY GUAR 01/25 5.299	914,938
3	750,000	COOPERATIEVE RABOBANK UA COMPANY GUAR 08/25 4.375	813,923
4	605,000	CENTURYLINK INC SR UNSECURED 04/24 7.5	682,138
5	620,000	HSBC HOLDINGS PLC SR UNSECURED 05/26 3.9	661,366
6	465,000	FIRSTENERGY CORP SR UNSECURED 11/31 7.375	656,627
7	560,000	HCA INC COMPANY GUAR 02/25 5.375	619,265
8	540,000	ALLY FINANCIAL INC SUBORDINATED 11/25 5.75	604,125
9	525,000	BAUSCH HEALTH AMERICAS COMPANY GUAR 144A 05/23 8.5	597,870
10	545,000	KINETIC CONCEPT/KCI USA SECURED 144A 11/21 12.5	560,669

Note: A complete list of portfolio holdings is available upon request.

Actuarial Section

Dear Members of the Board of Trustees

We prepared annual actuarial valuations as of January 1, 2020 for the Anne Arundel County Retirement and Pension System. The system consists of the following plans, each of which is valued separately:

- Employees' Retirement Plan
- Police Service Retirement Plan
- Fire Service Retirement Plan
- Detention Officers' and Deputy Sheriffs' Retirement Plan

The contributions determined in these valuations are for the Fiscal year ending June 30, 2021. The valuations are based on employee and financial data, which were provided by the County Office of Personnel and County Office of Finance, respectively. We have performed limited tests for consistency and reasonableness and have not found any material problems with the data.

The following GASB68 information is provided as of the December 31, 2019 measurement date for FYE2020. This will require that the actual County contributions for the second half of FY20 (i.e. contributions made after the measurement date) be treated as a deferred outflow (when the amount is known), but this will not affect the Total Pension Expense recognized for FY20. The methods, assumptions, and participant data as of December 31, 2019 used for these calculations are summarized in the relevant sections of this report. The GASB68 information was prepared using the Entry Age Normal actuarial cost method with Normal Cost ending at DROP entry date.

Methodology, Reliance and Certification

This report is prepared for the County. The report contains the actuarial information to be included with the County's financial statements for the year end June 30, 2020 (the County's fiscal year end date) as required by GASB68. This information has been prepared for use in the financial statements of the County. This information is not intended for, nor should it be used for, any additional purposes.

All costs, liabilities and other factors under the Plans were determined in accordance with generally accepted actuarial principles and procedures. The funding method used in the actuarial valuations is the projected unit credit cost method. The objective of this funding method is to produce level contributions as a percentage of payroll as long as the average age of the population does not change. The funding objective of the System is to meet long-term benefit promises through contributions and investment income. The funding ratio, which is the actuarial value of assets divided by the actuarial accrued liability, is an estimate of how well the System is meeting the objective. On the GASB reporting basis, the ratio for all four plans increased from the prior year.

The included calculations assume that the members and the County will continue to make all required actuarially determined contributions. Based on that assumption, the plan's fiduciary net position is expected to be available to make all future benefit payments of current plan members.

These calculations and comparisons with assets are applicable for the valuation date only. The future is uncertain, and the plan may become better funded or more poorly funded in the future. This valuation does not provide any guarantee that the plan will be able to provide the promised benefits in the future.

Methodology, Reliance and Certification (cont.)

This is a deterministic valuation in that it is based on a single set of assumptions. This set of assumptions is one possible basis for our calculations. Other assumptions may be equally valid. The future is uncertain, and the plan's actual experience will differ from those assumptions; these differences may be significant or material because these results are very sensitive to the assumptions made and, in some cases, to the interaction between the assumptions. We may consider that some factors are not material to the valuation of the plan and may not provide a specific assumption for those factors. We may have used other assumptions in the past. We will likely consider changes in assumptions at a future date.

The County is responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods and assumptions used in this valuation are those that have been so prescribed and are described in this report. The County is solely responsible for communicating to Bolton Partners, Inc. any changes required thereto.

The County could reasonably ask how the valuation would change if we used a different assumption set or if plan experience exhibited variations from our assumptions. This report does not contain such an analysis. This type of analysis would be a separate assignment.

The cost of this plan is determined by the benefits promised by the plan, the plan's participant population, the investment experience of the plan and many other factors. An actuarial valuation is a budgeting tool for the County or in this case a measure of accounting expense. It does not affect the cost of the plan. As the experience of the plan evolves, it is normal for the level of contributions and expense to the plan to change. If a contribution is not made for a particular year, either by deliberate choice or because of an error in a calculation, that contribution can be made in later years. We will not be responsible for contributions that are made at a future time rather than an earlier time. The plan sponsor is responsible for funding the cost of the plan.

We make every effort to ensure that our calculations are accurately performed. These calculations are complex. Despite our best efforts, we may make a mistake. We reserve the right to correct any potential errors by amending the results of this report or by including the corrections in a future valuation report.

Because modeling all aspects of a situation is not possible or practical, we may use summary information, estimates, or simplifications of calculations to facilitate the modeling of future events in an efficient and cost-effective manner. We may also exclude factors or data that are immaterial in our judgment. Use of such simplifying techniques does not, in our judgment, affect the reasonableness of valuation results for the plan.

This report is based on plan provisions, census data, and asset data submitted by the County. We have relied on this information for purposes of preparing this report but have not performed an audit. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information. The plan sponsor is solely responsible for the validity and completeness of this information.

The County is solely responsible for selecting the plan's investment policies, asset allocations and individual investments. Bolton Partners, Inc.'s actuaries have not provided any investment advice to the County.

The information in this report was prepared for the internal use of the County, the plan and their auditors in connection with our actuarial valuations of the pension plan as required by GASB68. This report may not be used for any other purpose; Bolton Partners, Inc. is not responsible for the consequences of any unauthorized use or the reliance on this information by any other party.

The calculation of actuarial liabilities for valuation purposes is based on a current estimate of future benefit payments. The calculation includes a computation of the "present value" of those estimated future benefit payments using an assumed discount rate; the higher the discount rate assumption, the lower the estimated liability will be. For purposes of estimating the liabilities (future and accrued) in this report, you selected an assumption based on the expected long-term rate of return on plan investments. Using a lower discount rate assumption, such as a rate based on long-term bond yields, could substantially increase the estimated present value of future and accrued liabilities.

Methodology, Reliance and Certification (cont.)

This report provides certain financial calculations for use by the auditor. These values have been computed in accordance with our understanding of generally accepted actuarial principles and practices and fairly reflect the actuarial position of the Plan. The various actuarial assumptions and methods which have been used are, in our opinion, appropriate for the purposes of this report.

The report is conditioned on the assumption of an ongoing plan and is not meant to present the actuarial position of the Plan in the case of Plan termination. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status), and changes in plan provisions or applicable law.

The actuarial assumptions and methods used for these valuations meet the parameters set forth in the Governmental Accounting Standards Board (GASB) Statement No. 67, Financial Reporting for Defined Benefit Pension Plans.

We have included the following supporting schedules: Actuarial Basis, Schedule of Member Valuation Data, Summary of Plan Provisions, Summary of Major Legislative changes, a Solvency Test, and Analysis of Financial Experience. We meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained in the reports and are currently compliant with the Continuing Professional Development Requirement of the Society of Actuaries.



Ann M. Sturner, FSA, EA

May 15, 2020

Date



Michael Spadaro, ASA

May 15, 2020

Date

Order of Attachments by Plan

Attachment A.....Employee's Retirement Plan

Attachment B.....Police Service Retirement Plan

Attachment C.....Fire Service Retirement Plan

Attachment D.....Detention Officers' and Deputy Sheriffs' Retirement Plan

Attachment A

Employees' Retirement Plan

A. Method Used for Funding Purposes

This valuation was performed using the projected unit credit cost method. The contribution equals the sum of the normal cost and the amount necessary to amortize any actuarial gains/(losses) over closed periods. Effective January 1, 2014, new bases due to changes in actuarial assumptions or differences between actual and expected experience are amortized over closed periods of 20 years. New bases due to changes in plan benefits are amortized over the expected future working lifetime of affected employees. Amortization payments increase 3.0% per year.

B. Asset Valuation Method

The actuarial value of assets is determined by spreading the asset gain or loss over a 5-year period. The asset gain or loss is the amount by which the actual market value investment return differs from the expected market value investment return. The method was effective with the 1/1/2011 actuarial valuation. The Actuarial Value of Assets recognizes adjustments resulting from an audit.

There is a six-month lag between the valuation and the fiscal year. The 2020 valuation determines the County contributions due for the fiscal year ending June 30, 2021.

C. Valuation Procedures

Tier One active participants who terminate prior to age 40 are assumed to elect to receive a refund of employee contributions with interest. Employees who terminate at or after age 40 are assumed to receive their vested benefit at normal retirement date.

D. Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the Plan for purposes of determining pension expense and liabilities under GASB. These assumptions are used for all members eligible to receive benefits under the Employees' Plan provisions.

Economic

Investment Return	7.45% compounded annually net of investment expenses (3.0% inflation and 4.45% real return) effective January 1, 2019.
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Salary Increases	A graded schedule is used. See Earnings Progression Table.
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Cost of Living Adjustment	Benefits accrued before Bill 88-96 are assumed to increase by 3.0% of the original benefit each year. Benefits accrued after Bill 88-96 are assumed to increase by 1.8% of the current benefit each year.
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Other

Mortality	Healthy: RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018.
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	Disabled: RP-2014 Blue Collar Mortality Table for males and females set forward nine years and projected generationally using scale MP-2018.
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	Projection to the year of the valuation using scale MP-2018 is assumed to be current experience. The generational projection beyond the valuation date is to account for future mortality improvements.
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Withdrawal	See Table of Sample Rates.
Disability	See Table of Sample Rates. 10% of disablement is assumed to be duty-related.

Administrative Expenses The average of actual expenses for the two years preceding the valuation date, rounded to the nearest thousand.

Retirement Rates

<u>Age</u>	<u>< 20</u>	<u>Years of Service</u>		
		<u>20-29</u>	<u>30</u>	<u>31+</u>
50 - 54	N/A	4%	50%	25%
55 - 59	N/A	9%	40%	5%
60	15%	15%	15%	15%
61	12%	12%	12%	12%
62	20%	20%	20%	20%
63 - 64	12%	12%	12%	12%
65	25%	25%	40%	25%
66 - 69	15%	15%	25%	15%
70	100%	100%	100%	100%

Percentage Married Males – 70%; Females – 70%

Age Difference Males are assumed to be four years older than their spouses.

Military Service Active liabilities (which depend on credited service) are loaded by 1.0% to account for future crediting of military service.

Disability Leave Active liabilities (which depend on credited service) are loaded by 1.5% to account for future crediting of disability service.

The Tier 1 service cap of 60% is valued as 62% to account for Disability and Military service credit not being limited by the 30-year cap on service.

Table of Sample Mortality Rates (2020)				
Age	Healthy Mortality		Disabled Mortality	
	Males	Females	Males	Females
20	0.07%	0.02%	0.06%	0.02%
25	0.07%	0.02%	0.07%	0.03%
30	0.06%	0.02%	0.09%	0.05%
35	0.07%	0.03%	0.14%	0.08%
40	0.10%	0.05%	0.23%	0.12%
45	0.16%	0.09%	0.35%	0.18%
50	0.26%	0.13%	0.57%	0.28%
55	0.38%	0.19%	1.08%	0.46%
60	0.64%	0.31%	1.89%	0.76%
65	1.23%	0.50%	3.12%	1.27%

Attained Age	Table of Sample Decrement Rates		
	Percentage		
	Disablement	Withdrawal	
		Males	Females
20	0.018%	12.47%	21.57%
25	0.018	9.97	18.12
30	0.018	6.78	13.34
35	0.027	4.37	9.05
40	0.055	3.48	7.48
45	0.090	2.40	5.95
50	0.146	0.95	2.34
55	0.240	0.65	1.61
60	0.358	0.00	0.00
64	0.487	0.00	0.00

Earnings Progression	
Attained Age	Percentage Increase at Attained Age
20	6.75%
25	6.25
30	5.75
35	5.25
40	4.75
45	4.25
50	3.75
55	3.75

Anne Arundel County Retirement and Pension System
Employees' Retirement Plan - Schedules of Member Valuation Data
December 31, 2019

Active Members

Valuation Date	Number	Annual Payroll (Jan. 1 Rate)	Average Annual Pay	% Increase in Average Pay
January 1, 2011	2,239	123,498,129	55,158	(0.3%)
January 1, 2012	2,209	120,415,534	54,511	(1.2%)
January 1, 2013	2,152	116,024,717	53,915	(1.1%)
January 1, 2014	2,125	115,809,426	54,499	1.1%
January 1, 2015	2,207	127,090,869	57,585	5.7%
January 1, 2016	2,186	127,827,040	58,475	1.5%
January 1, 2017	2,187	130,312,665	59,585	1.9%
January 1, 2018	2,278	138,239,224	60,684	1.8%
January 1, 2019	2,191	134,891,500	61,566	1.5%
January 1, 2020	2,170	138,428,352	63,792	3.6%

Members With Deferred Benefits

Year	Number at Beginning of Year	Additions	Decreases	Number at End of Year
1/1/10 to 12/31/10	257	24	(24)	257
1/1/11 to 12/31/11	257	22	(19)	260
1/1/12 to 12/31/12	260	41	(28)	273
1/1/13 to 12/31/13	273	34	(36)	271
1/1/14 to 12/31/14	271	27	(29)	269
1/1/15 to 12/31/15	269	30	(23)	276
1/1/16 to 12/31/16	276	18	(16)	278
1/1/17 to 12/31/17	278	24	(25)	277
1/1/18 to 12/31/18	277	43	(17)	303
1/1/19 to 12/31/19	303	32	(34)	301

Anne Arundel County Retirement and Pension System
Employees' Retirement Plan - Schedules of Member Valuation Data
December 31, 2019

Members Receiving Benefits

Year	Number at Beginning of Year	Additions	Decreases	Number at End of Year
1/1/10 to 12/31/10	1,270	82	(27)	1,325
1/1/11 to 12/31/11	1,325	107	(39)	1,393
1/1/12 to 12/31/12	1,393	110	(35)	1,468
1/1/13 to 12/31/13	1,468	130	(54)	1,544
1/1/14 to 12/31/14	1,544	113	(34)	1,623
1/1/15 to 12/31/15	1,623	123	(36)	1,710
1/1/16 to 12/31/16	1,710	139	(42)	1,807
1/1/17 to 12/31/17	1,807	131	(44)	1,894
1/1/18 to 12/31/18	1,894	141	(61)	1,974
1/1/19 to 12/31/19	1,974	128	(51)	2,051

Summary of Retirees and Beneficiaries Added to and Removed from Rolls

Year Ending	Added to Rolls		Removed from Rolls		Rolls End of Year		% Increase in Average Annual Allowance	Average Annual Allowance
	Number	Annual Allowance ¹	Number	Annual Allowance	Number	Annual Allowance		
12/31/2010	82	\$2,841,455	27	\$403,314	1,325	\$30,073,270	4.31%	\$22,697
12/31/2011	107	\$3,147,404	39	\$744,281	1,393	\$32,476,393	2.72%	\$23,314
12/31/2012	110	\$3,351,810	35	\$557,851	1,468	\$35,270,352	3.05%	\$24,026
12/31/2013	130	\$3,331,597	54	\$1,034,187	1,544	\$37,567,762	1.27%	\$24,331
12/31/2014	113	\$2,915,234	34	\$720,676	1,623	\$39,762,320	0.69%	\$24,499
12/31/2015	123	\$3,092,029	36	\$775,758	1,710	\$42,078,591	0.44%	\$24,607
12/31/2016	139	\$3,935,345	42	\$693,441	1,807	\$45,320,495	1.93%	\$25,081
12/31/2017	131	\$4,473,521	44	\$831,055	1,894	\$48,962,961	3.07%	\$25,852
12/31/2018	141	\$5,147,623	61	\$1,133,546	1,974	\$52,977,038	3.81%	\$26,837
12/31/2019	128	\$4,694,293	51	\$1,110,285	2,051	\$56,561,046	2.76%	\$27,577

¹ Includes COLAs for all retirees

Tier One Members

Compensation For purposes of the pension plan, compensation is the regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses and commissions.

Final Earnings The average of the highest 3 years of all basic pays.

Eligibility Requirements Full-time general employees of the County will be eligible to participate in the pension plan upon hire.

Employee Contributions 4% of compensation.

Retirement Date

Normal Retirement The first of the month coincident with or next following the participant's 60th birthday and attainment of vested status or, if earlier, when the participant has 30 years of service.

Early Retirement Reduced benefits are available the first of any month coincident with or next following the completion of 20 years of continuous service, provided the participant is at least age 50.

Postponed Retirement A participant may work beyond his normal retirement date and may subsequently retire on the first of any month.

Retirement Benefits

Normal Retirement 2.0% of final earnings for each year of service (maximum 60% plus 2% times unused disability credit and pre-employment military service credit).

Early Retirement Same as normal retirement but reduced actuarially for early commencement.

<u>Years Early</u>	<u>Reduction Factor</u>
1	2%
2	5%
3	9%
4	14%
5	20%
6	28%
7	36%
8	44%
9	52%
10	60%

Postponed Retirement Same as normal retirement but based on continued accrual past normal retirement date.

Disability

Eligibility Totally and permanently disabled (except as the result of actions specified in the County code). To receive duty-related disability benefits, there is no service requirement. Five years of service are required to receive non-duty related benefits.

Duty-Related The greater of the accrued benefit or 66-2/3% of final earnings, payable immediately, unreduced.

Non-Duty Related The greater of the accrued benefit or 25% of final earnings, payable immediately, unreduced.

<i>Normal form of Payment</i>	Monthly life annuity with modified cash refund.
<i>Termination of Employment</i>	
Less than 5 years of service	Return of employee contributions with 4.25% interest.
5+ years of service	For employees hired before July 1, 2015, at the discretion of the employee, either a return of contributions with interest or the accrued normal retirement benefit taking into account final earnings and service at date of termination, payable at normal retirement date. For employees hired on or after July 1, 2015 and County Council, appointed exempt employees, and County Executives hired on or after December 1, 2014, return of employee contributions with interest.
10+ years of service	For employees hired on or after July 1, 2015 and County Council members whose first term begins on or after December 1, 2014, at the discretion of the employee, either a return of contributions with interest or the accrued normal retirement benefit taking into account final earnings and service at date of termination, payable at normal retirement date.
<i>Death Benefits</i>	
Married and eligible for early retirement	The greatest of: • \$10 per month • 50% of the final earnings • The accrued benefit, reduced actuarially for early commencement and the joint and 100% survivor form.
Unmarried or not eligible for early retirement	A lump sum of 50% of final earnings.
<i>Cost of Living Increase</i> (simple, for benefits accrued as of 1/31/97)	Retiree benefits are adjusted each year. The revised benefit amount is the lesser of: • Prior year benefit plus base benefit multiplied by increase in current March CPI from March CPI for prior year. • Benefit increased by 3% of initial benefit.
<i>Cost of Living Increase</i> (compound, for benefits accrued after 1/31/97)	Retiree benefits are adjusted each year. The revised benefit amount is the lesser of: • Prior year benefit multiplied by 60% of the increase in current March CPI from March CPI for prior year. • Benefit increased by 2.5%. Benefit payments can be reduced or increased. However, the amount can never be less than the initial benefit amount.
<u>Tier Two Members</u>	
<i>Compensation</i>	For purposes of the pension plan, compensation is the regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses and commissions.
<i>Final Earnings</i>	The average of the highest 3 years of all basic pays.
<i>Eligibility Requirements</i>	Full-time general employees of the County will be eligible to participate in the pension plan upon hire. Members can elect to join Tier One.
<i>Employee Contributions</i>	No employee contributions required or allowed.

Retirement Date

Normal Retirement	The first of the month coincident with or next following the participant's 60 th birthday and attainment of vested status or, if earlier, when the participant has 30 years of service.
Early Retirement	Reduced benefits are available the first of any month coincident with or next following the completion of 20 years of continuous service, provided the participant is at least age 50.
Postponed Retirement	A participant may work beyond his normal retirement date and may subsequently retire on the first of any month.

Retirement Benefits

Normal Retirement	1.0% of final earnings for each year of service.
Early Retirement	The normal retirement benefit is reduced for early commencement, using the same reduction factors as Tier 1.
Postponed Retirement	Same as normal retirement but based on continued accrual past normal retirement date.

Normal form of Payment

Monthly life annuity.

Disability

Eligibility	Totally and permanently disabled (except as the result of actions specified in the County code). To receive duty-related disability benefits, there is no service requirement. Five years of service are required to receive non-duty related benefits.
Duty-Related	The greater of the accrued benefit or 66-2/3% of final earnings, payable immediately, unreduced.
Non-duty Related	The greater of the accrued benefit or 25% of final earnings, payable immediately, unreduced.

Termination of Employment

Less than 5 years of service	No benefit is payable.
5+ years of service	For employees hired before July 1, 2015, the accrued normal retirement benefit taking into account final earnings and service at date of termination, payable at normal retirement date. For employees hired on or after July 1, 2015 and County Council, appointed exempt employees, and County Executives hired on or after December 1, 2014, no benefit is payable.
10+ years of service	For employees hired on or after July 1, 2015 and County Council members whose first term begins on or after December 1, 2014, the accrued normal retirement benefit taking into account final earnings and service at date of termination, payable at normal retirement date.

Death benefits

Married and eligible for early retirement	The greatest of: • \$10 per month • 50% of the final earnings • The accrued benefit reduced actuarially for early commencement and the joint and 100% survivor form.
Unmarried or not eligible for early retirement	A lump sum of 50% of final earnings.

Cost of Living Increase
(compound)

Retiree benefits are adjusted each year. The revised benefit amount is the lesser of:

- Prior year benefit multiplied by 60% of the increase in current March CPI from March CPI for prior year.
- Benefit increased by 2.5%.

Benefit payments can be reduced or increased. However, the amount can never be less than the initial benefit amount.

County Council Bill No. 34-92	Effective 6/1/92 through 8/31/92
	Participants age 50 or older with at least 20 years of service could elect to retire with an additional pension equal to 1/12 of 2% for each year of credited service. The additional amount could be taken as a pension increase, a lump sum, or as a temporary supplement to age 62. Appropriate actuarial adjustments apply.
State House Bill No. 687	Effective 7/1/90
	County employees were given the opportunity to apply for credit under the County's plan for previous service with the State of Maryland (or a political subdivision of the State).
County Council Bill No. 90-93	Effective 12/22/93
	Plan participants are required to pay the full actuarial value of service purchases. Purchases can only be made at retirement. To be eligible, an employee must have 60 months of County service. Existing plan participants must be notified of their right to purchase service under existing law.
County Council Bill No. 82-94	Effective 10/31/94
	Transfers assets from general employees plan to A&E plan for participants who have transferred between these two plans.
County Council Bill No. 88-96	Effective 12/4/96
	The previous method of calculating cost of living increase will only apply to benefits accrued as of 1/31/97. The cost of living increase for future benefits is a compound increase equal to 60% of the annual change in the CPI, not to exceed 2.5%. Employees hired, or rehired, on or after 12/4/96 will be Tier Two employees and will have different benefits than current employees.
County Council Bill No. 41-99	Effective 6/15/99
	Employees paid under the deputy sheriff employees pay schedule become Tier Two members of the Detention Center Plan effective as of January 1, 1999. Service credited under the Employees' Plan will count as credited service in the Detention Center Plan and no future benefit will be paid from the Employees' Plan. Assets are transferred from the Employees' Plan to the Detention Center Plan in an amount equal to the projected unit credit accrued liability in the Employees' Plan.
Recodification	Effective 2/25/2002
	Allows a benefit based on disability leave service and pre-plan military service to be paid over the 60% cap. Normal retirement was changed to the earlier of 30 years of service or age 60.
County Council Bill No. 74-09	Effective 12/11/2009.
	For non-represented members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 3% for determining the final average basic pay.
County Council Bill No. 6-10	Effective 4/18/2010.
	Provides for a disability benefit for those participants who are totally and permanently disabled as a result of qualified military service.
County Council Bill No. 98-12	Effective 5/13/2013
	Changed the definition of "final average basic pay" from highest 3 out of the last 5 years basic pays to highest 3 of all basic pays.
County Council Bill No. 97-13	Effective 4/14/2014
	Members of the Employees' Plan and Category II members of the Detention and Deputy Sheriffs' Plan hired on or after July 1, 2015 will be subject to 10 year vesting and 10 year normal retirement provisions. The 10 year requirement also affects the ability to purchase service or get credit for pre-plan military service. The 10 year requirement extends to County Council members hired on or after December 1, 2014.
County Council Bill No. 50-15	Effective 7/1/2015

Anne Arundel County Retirement and Pension System
Employees' Retirement Plan – Summary of Major Legislative Changes
December 31, 2019

	Category I members of the Detention and Deputy Sheriffs' Plan, as well as correctional facility administrators, assistant correctional facility administrators, and superintendents of detention facilities are eligible to participate in DROP upon completion of 20 years of actual plan service.
County Council Bill No. 56-16	Effective 7/1/2016
	Allows for interest to be credited to a DROP member's account in the sixth year of DROP participation. Requires Appointing Authority approval for DROP participation in 6 th year for the following classifications: Police Sergeant, Police Lieutenant, Police Captain, Police Major, Deputy Chief or Police Chief.
County Council Bill No. 86-16	Effective January 1, 2017
	To ensure compliance with IRS regulations, members of the Employees' Plan have 30 days from date of hire to make an irrevocable election between Tier 1 and Tier 2; and effective January 1, 2017 members of Tier 2 the Employees' Plan can no longer later elect to transfer to Tier 1. Employees hired before December 31, 2016 who elect Tier 2 may still be allowed to transfer to Tier 1 before their 5 th year anniversary.
County Council Bill No. 78-17	Effective: July 1. 2017
	Eliminates the reduction in benefit for DROP retirees if they are reemployed in any capacity that meets the exceptions set forth in 5-1-203(c)(1). Also adds an exception under 5-1-203(c) for any retirees (including DROP participants) who are reemployed into a grant funded contractual position under 802(a)(17) of the Charter.
County Council Bill No.95-17	Effective 3/23/2018
	Created the Employee Retirement Savings Plan and allowed certain non-vested members of the Employees' Plan a one-time opportunity to transfer the present value of their Employees' Plan accrued benefit to it.
County Council Bill No. 66-18	Effective 9/3/2018
	Except for Battalion Chiefs, allows for interest to be credited to a DROP member's account in the sixth year of DROP participation, for members entering their sixth year in DROP after July 1, 2018.

The Anne Arundel County Employees' Retirement Plan

Solvency Test

2011 to 2020

Actuarial Valuation Date	Active Member Contribution (1)	Retirees and Beneficiaries Inactive and Pay- Status Members (2)	Active Members Employer Financed Portion (3)	Actuarial Value of Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
					(1)	(2)	(3)
1/1/2011	60,121,679	360,630,667	206,517,241	522,165,145	100%	100%	49.1%
1/1/2012	62,225,800	383,559,354	207,867,904	516,070,401	100%	100%	33.8%
1/1/2013	63,403,319	423,101,739	207,075,617	508,232,321	100%	100%	10.5%
1/1/2014	63,002,887	460,323,316	212,402,830	545,812,384	100%	100%	10.6%
1/1/2015	65,660,434	486,377,944	229,067,582	582,795,438	100%	100%	13.4%
1/1/2016	66,159,912	490,715,140	228,431,557	604,433,282	100%	100%	20.8%
1/1/2017	65,446,178	523,475,213	224,074,001	627,147,522	100%	100%	17.1%
1/1/2018	66,260,425	558,360,980	226,842,467	653,155,048	100%	100%	12.6%
1/1/2019	64,509,950	610,456,195	238,768,689	665,037,621	100%	98%	0.0%
1/1/2020	64,342,594	646,055,438	243,254,365	682,574,049	100%	96%	0.0%

Analysis of Financial Experience

Reasons for Change in the Unfunded Accrued Liability

The unfunded accrued liability increased from \$248,697,213 to \$271,078,348. The funded status decreased from 72.8% to 71.6%.

Reasons for Change in Contribution Rates

The employer contribution rate increased from 23.2% for the fiscal year ending June 30, 2020 to 24.4% for the fiscal year ending June 30, 2021. The increase of 1.2% is due to the following reasons:

Investment Performance	0.6%
Pay Increases	0.0%
New Entrants/Change in Normal Cost	0.0%
COLA	-0.3%
Change in Expenses	0.0%
Assumption and Method Changes	0.0%
Demographics and Other Changes	0.9%

Net Pension Liability of the County

The components of the net pension liability of the County at December 31, 2019, were as follows:

Total pension liability	\$ 973,355,989
Plan fiduciary net position	<u>(690,383,355)</u>
County's net pension liability	<u>\$ 282,972,634</u>
Plan fiduciary net position as a percentage of the total pension liability	70.93%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of December 31, 2019 using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	Rates vary by participant age
Investment rate of return	7.45%, net of pension plan investment expense, including inflation
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A nine-year set forward is used for post-disability mortality.

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Sensitivity of the net pension liability to changes in the discount rate

	<u>1% Decrease</u> <u>6.45%</u>	<u>Current</u> <u>Discount Rate</u> <u>7.45%</u>	<u>1% Increase</u> <u>8.45%</u>
County's net pension liability	\$ 393,442,913	\$ 282,972,634	\$ 189,930,038

Changes in the Net Pension Liability

	Increase (Decrease)		
	Total Pension Liability	Plan Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a) - (b)
Balances at 12/31/18	\$ 901,747,616	\$ 620,586,567	\$ 281,161,049
Changes for the year:			
Service cost	16,343,802		16,343,802
Interest	65,128,435		65,128,435
Changes of benefit terms	-		-
Differences between expected and actual experience	12,546,231		12,546,231
Changes of assumptions	32,670,772		32,670,772
Contributions - employer		29,637,342	(29,637,342)
Contributions - member		5,511,825	(5,511,825)
Net investment income		90,337,714	(90,337,714)
Benefit payments, including refunds of member contributions	(55,080,867)	(55,080,867)	-
Administrative expense		(609,226)	609,226
Other		-	-
Net Changes	<u>71,608,373</u>	<u>69,796,788</u>	<u>1,811,585</u>
Balances at 12/31/19	<u>\$ 973,355,989</u>	<u>\$ 690,383,355</u>	<u>\$ 282,972,634</u>

Anne Arundel County Retirement and Pension System
Employees' Retirement Plan – Actuarial Information
December 31, 2019

Changes in the County's Net Pension Liability and Related Ratios

Last 10 Fiscal Years

(Dollar amounts in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Total pension liability										
Service cost	\$ 16,344	\$ 16,687	\$ 15,497	\$ 15,144	\$ 15,115	\$ 14,159				
Interest	65,128	63,246	60,502	59,292	58,329	53,353				
Changes of benefit terms	-	-	-	-	-	-				
Differences between expected and actual experience	12,546	3,826	9,562	(12,599)	(17,971)	16,408				
Changes of assumptions	32,671	-	-	-	-	22,567	Information for FY2013 and earlier is not available			
Benefit payments, including refunds of member contributions	(55,081)	(50,575)	(47,380)	(44,024)	(41,253)	(39,012)				
Net change in total pension liability	71,608	33,184	38,181	17,813	14,221	67,475				
Total pension liability - beginning	901,748	868,564	830,383	812,570	798,349	730,874				
Total pension liability - ending (a)	<u>\$ 973,356</u>	<u>\$ 901,748</u>	<u>\$ 868,564</u>	<u>\$ 830,383</u>	<u>\$ 812,570</u>	<u>\$ 798,349</u>				
Plan fiduciary net position										
Contributions - employer	\$ 29,637	\$ 27,033	\$ 25,654	\$ 25,810	\$ 25,630	\$ 24,451				
Contributions - member	5,512	5,612	5,472	5,182	4,847	4,662				
Net investment income	90,338	(31,166)	94,908	41,345	(8,374)	28,451				
Benefit payments, including refunds of member contributions	(55,081)	(50,575)	(47,380)	(44,024)	(41,253)	(39,012)				
Administrative expense	(609)	(543)	(526)	(497)	(504)	(519)				
Other	-	-	-	-	-	-				
Net change in plan fiduciary net position	\$ 69,797	\$ (49,640)	\$ 78,127	\$ 27,816	\$ (19,654)	\$ 18,034				
Plan fiduciary net position - beginning	620,587	670,226	592,099	564,283	583,936	565,902				
Plan fiduciary net position - ending (b)	<u>\$ 690,383</u>	<u>\$ 620,587</u>	<u>\$ 670,226</u>	<u>\$ 592,099</u>	<u>\$ 564,283</u>	<u>\$ 583,936</u>				
County's net pension liability - ending (a)-(b)	<u>\$ 282,973</u>	<u>\$ 281,161</u>	<u>\$ 198,337</u>	<u>\$ 238,284</u>	<u>\$ 248,287</u>	<u>\$ 214,413</u>				
Plan fiduciary net position as a percentage of the total pension liability	70.93%	68.82%	77.16%	71.30%	69.44%	73.14%				
Covered payroll	\$ 138,428	\$ 134,892	\$ 138,239	\$ 130,313	\$ 127,827	\$ 127,091				
County's net pension liability as a percentage of covered payroll	204.42%	208.43%	143.47%	182.86%	194.24%	168.71%				
Expected average remaining service years of all participants	5	5	5	5	5	5				

Notes to Schedule:

Benefit changes: There are no benefit changes reflected in the current schedule.

Changes of assumptions: The following assumptions were changed: interest rate, mortality, retirement rates, turnover rates, and disability rates. Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Anne Arundel County Retirement and Pension System
Employees' Retirement Plan – Actuarial Information
December 31, 2019

Schedule of County Contributions

Last 10 Fiscal Years

(Dollar amounts in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	\$ 29,637	\$ 27,033	\$ 25,654	\$ 25,810	\$ 25,655	\$ 24,426				
Contributions in relation to the actuarially determined contribution	29,637	27,033	25,654	25,810	25,630	24,451	Information for FY2013 and earlier is not available			
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 25</u>	<u>\$ (25)</u>				
Covered payroll	\$ 138,428	\$ 134,892	\$ 138,239	\$ 130,313	\$ 127,827	\$ 127,091				
Contributions as a percentage of covered payroll	21.41%	20.04%	18.56%	19.81%	20.05%	19.24%				

Notes to Schedule

Valuation date:

Actuarially determined contribution amounts are calculated as of each January 1 for the upcoming County fiscal year beginning July 1. Actuarial valuations are performed every year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Projected Unit Credit
Amortization method	Level percent of payroll (closed), increasing 3.0% per year.
Remaining amortization period	Remaining Amortization periods range from 14 to 23 years.
Asset valuation method	5-year smoothed market
Inflation	3.00%
Salary increases	Rates vary by participant age
Investment rate of return	7.45%, net of pension plan investment expense, including inflation
Retirement age	Rates vary by participant age and service
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A nine-year set forward is used for post-disability mortality.

Attachment B

Police Service Retirement Plan

A. Method Used for Funding Purposes

This valuation was performed using the projected unit credit cost method. The contribution equals the sum of the normal cost and the amount necessary to amortize any actuarial gains/(losses) over closed periods. Effective January 1, 2014, new bases due to changes in actuarial assumptions or differences between actual and expected experience are amortized over closed periods of 20 years. New bases due to changes in plan benefits are amortized over the expected future working lifetime of affected employees. Amortization payments increase 3.0% per year.

B. Asset Valuation Method

The actuarial value of assets is determined by spreading the asset gain or loss over a 5-year period. The asset gain or loss is the amount by which the actual market value investment return differs from the expected market value investment return. The method was effective with the 1/1/2011 actuarial valuation. The Actuarial Value of Assets recognizes adjustments resulting from the final prior year's audit.

There is a six-month lag between the valuation and the fiscal year. The 2020 valuation determines the County contributions due for the fiscal year ending June 30, 2021.

C. Valuation Procedures

Generally, the plan provides a 100% survivor benefit to the spouse at the time of the retiree's death. This allows for post retirement marriages. We have valued the forms of payment originally coded in the data or based this on marital status at time of retirement (generally a 100% survivor benefit but not always). 80% of employees and 70% of current retired and disabled members are assumed married. Males are assumed to be four years older than their spouses.

D. Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the Plan for purposes of determining pension expense and liabilities under GASB. These assumptions are used for all members eligible to receive benefits under the Police Service Retirement Plan provisions.

Economic

Investment Return	7.45% compounded annually net of investment expenses (3.0% inflation and 4.45% real return) effective January 1, 2019.
Salary Increases	A graded schedule is used. See Earnings Progression Table.
Cost of Living Adjustment	Benefits accrued before Bill 88-96 are assumed to increase by 3.0% of the current benefit each year effective January 1, 2014. Benefits accrued after Bill 88-96 are assumed to increase by 1.8% of the current benefit each year effective January 1, 2014.

Other

Mortality	Healthy: RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. Disabled: RP-2014 Blue Collar Mortality Table for males and females set forward five years and projected generationally using scale MP-2018. Projection to the year of the valuation using scale MP-2018 is assumed to be current experience. The generational projection beyond the valuation date is to account for future mortality improvements.
Withdrawal	See Table of Sample Rates.
Disability	See Table of Sample Rates. 75% of disablement is assumed to be duty-related.
Administrative Expenses	The average of actual expenses for the two years preceding the valuation date, rounded to the nearest thousand.

Insured Benefits Our calculations reflect that some benefits have already been purchased.

Retirement Rates¹ Sample Rates:

For GASB68 accounting	<u>Age</u>	<u>Years of Service</u>		
		<u>20</u>	<u>22</u>	<u>23+</u>
	40	26.40%	5.00%	100.00%
	45	18.34%	5.00%	100.00%
	50	36.66%	25.00%	100.00%
	55	30.00%	30.00%	100.00%

Percentage Married 80% of employees and 70% of current retirees and disabled retirees are assumed married.

Age Difference Males are assumed to be four years older than their spouses.

Military Service Active liabilities (which depend on credited service) are loaded by 3.25% to account for future crediting of military service.

Disability Leave Active liabilities (which depend on credited service) are loaded by 1.75% to account for future crediting of disability service.

Table of Sample Mortality Rates (2020)				
Age	Healthy Mortality		Disabled Mortality	
	Males	Females	Males	Females
20	0.07%	0.02%	0.07%	0.02%
25	0.07%	0.02%	0.06%	0.02%
30	0.06%	0.02%	0.07%	0.03%
35	0.07%	0.03%	0.10%	0.05%
40	0.10%	0.05%	0.16%	0.09%
45	0.16%	0.09%	0.26%	0.13%
50	0.26%	0.13%	0.38%	0.19%
55	0.38%	0.19%	0.64%	0.31%
60	0.64%	0.31%	1.23%	0.50%
65	1.23%	0.50%	2.09%	0.85%

¹ 100% at age 60.

Attained Age	Table of Sample Decrement Rates	
	Percentage	
	Disability	Withdrawal
20	0.3060%	7.97%
25	0.3060	5.31
30	0.3060	3.51
35	0.4526	2.56
40	0.9340	1.28
45	1.5619	0.64
50	2.2983	0.00
55	0.0000	0.00
60	0.0000	0.00
64	0.0000	0.00

Earnings Progression	
Attained Age	Percentage Increase at Attained Age
20	6.0%
25	6.0
30	5.5
35	5.0
40	4.5
45	4.0
50	4.0

Anne Arundel County Retirement and Pension System
Police Service Retirement Plan – Schedules of Member Valuation Data
December 31, 2019

Active Members

Valuation Date	Number	Annual Payroll (Jan. 1 Rate)	Average Annual Pay	% Increase in Average Pay
January 1, 2011	620 ¹	42,449,204	68,466	1.81%
January 1, 2012	636 ²	41,334,580	64,991	(5.08%)
January 1, 2013	640 ³	40,521,944	63,316	(2.58%)
January 1, 2014	666 ⁴	41,714,302	62,634	(1.08%)
January 1, 2015	693 ⁵	48,261,635	69,642	11.19%
January 1, 2016	684 ⁶	48,116,765	70,346	1.01%
January 1, 2017	699 ⁷	50,560,385	72,332	2.82%
January 1, 2018	688 ⁸	51,758,654	75,231	4.01%
January 1, 2019	699 ⁹	55,101,812	78,829	4.78%
January 1, 2020	786 ¹⁰	61,345,095	78,047	(0.01%)

¹ Includes 57 participants in DROP.

² Includes 60 participants in DROP.

³ Includes 60 participants in DROP.

⁴ Includes 58 participants in DROP.

⁵ Includes 55 participants in DROP.

⁶ Includes 43 participants in DROP.

⁷ Includes 55 participants in DROP.

⁸ Includes 54 participants in DROP.

⁹ Includes 61 participants in DROP.

¹⁰ Includes 73 participants in DROP.

Anne Arundel County Retirement and Pension System
Police Service Retirement Plan – Schedules of Member Valuation Data
December 31, 2019

Members Receiving Benefits

Year	Number at Beginning of Year	Additions	Decreases	Number at End of Year
1/1/10 to 12/31/10	571	26	(14)	583
1/1/11 to 12/31/11	583	31	(14)	600
1/1/12 to 12/31/12	600	40	(11)	629
1/1/13 to 12/31/13	629	22	(12)	639
1/1/14 to 12/31/14	639	29	(13)	655
1/1/15 to 12/31/15	655	46	(12)	689
1/1/16 to 12/31/16	689	37	(15)	711
1/1/17 to 12/31/17	711	33	(14)	730
1/1/18 to 12/31/18	730	31	(22)	739
1/1/19 to 12/31/19	739	32	(13)	758

Summary of Retirees and Beneficiaries Added to and Removed from Rolls

Year Ending	Added to Rolls		Removed from Rolls		Rolls End of Year		% Increase in Average Annual Allowance	Average Annual Allowance
	Number	Annual Allowance ¹¹	Number	Annual Allowance	Number	Annual Allowance		
12/31/2010	26	\$1,037,257	14	\$550,831	583	\$22,602,579	0.10%	\$38,769
12/31/2011	31	\$1,825,986	14	\$551,286	600	\$23,877,279	2.65%	\$39,795
12/31/2012	40	\$2,627,863	11	\$542,409	629	\$25,962,733	3.72%	\$41,276
12/31/2013	22	\$1,353,267	12	\$401,425	639	\$26,914,575	2.04%	\$42,120
12/31/2014	29	\$1,788,688	13	\$669,885	655	\$28,033,378	1.61%	\$42,799
12/31/2015	46	\$1,714,607	12	\$416,626	689	\$29,331,359	(0.53%)	\$42,571
12/31/2016	37	\$1,638,640	15	\$529,572	711	\$30,440,427	0.57%	\$42,814
12/31/2017	33	\$2,373,201	14	\$590,897	730	\$32,279,545	3.28%	\$44,219
12/31/2018	31	\$2,019,609	22	\$798,878	739	\$33,500,276	2.52%	\$45,332
12/31/2019	32	\$2,215,052	13	\$519,946	758	\$35,195,382	2.43%	\$46,432

¹¹ Includes COLAs for all retirees

Compensation	For purposes of the pension plan, compensation is the regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses and commissions.
Final Earnings	The average of the highest 3 years of all basic pays.
Eligibility Requirements	Full-time employees occupying the classes of work listed below and making contributions to the plan will be eligible to participate in the pension plan upon hire: • Police Officer • Police Sergeant • Police Lieutenant • Police Captain • Police Major • Deputy Police Chief • Chief of Police, by election
Employee Contributions	7.25% of compensation for all participants.
Retirement Date	
Normal Retirement	The first of the month coincident with or next following the participant's 50 th birthday with 5 years of service or the completion of 20 years of service. For those hired prior to February 25, 2002, the five years of service is not required.
Postponed Retirement	A participant may work beyond his normal retirement date and may subsequently retire on the first of any month.
Retirement Benefits	
Normal Retirement	2.5% of final earnings for each year of service up to 20 years plus 2.0% of final earnings per year of service in excess of 20 years (maximum 70% plus 2% times unused disability credit and pre-employment military service credit).
Postponed Retirement	Same as normal retirement but based on continued accrual past normal retirement date.
Normal Form of Payment	For single participants, monthly life annuity with payments guaranteed for 5 years. For married participants, unreduced 100% joint and survivor annuity with payments guaranteed for 5 years.
Disability	
Eligibility	Totally and permanently disabled (except as the result of activities specified in the County code) regardless of length of service.
Duty-Related	The greater of the accrued benefit or 66-2/3% of final earnings, payable immediately, unreduced.
Non-Duty Related	The greater of the accrued benefit or 20% of final earnings, payable immediately, unreduced.
Termination of Employment	
Less than 20 years of service	Return of employee contributions with 3.00% interest.

Death Benefits

Married	Duty-Related: Greater of accrued benefit or 66-2/3% of final earnings. Non-duty Related: Accrued Benefit.
Unmarried	Return of employee contributions with 3.00% interest plus, if one or more years of service, a lump sum of 50% of final earnings.

Cost of Living Increase
(for benefits accrued as of
1/31/97)

Retiree benefits are adjusted each year. The revised benefit amount is the lesser of:

- Base benefit multiplied by ratio of current 12-month average CPI to 12-month average CPI at retirement.
- Prior year benefit increased by 4%.

Benefit payments can be reduced or increased. However, the amount can never be less than the initial amount.

Cost of Living Increase
(for benefits accrued after
1/31/97)

Retiree benefits are adjusted each year. The revised benefit amount is the lesser of:

- Prior year benefit multiplied by 60% of the increase in current March CPI from March CPI for prior year.
- Prior year benefit increased by 2.5%.

Benefit payments can be reduced or increased. However, the amount can never be less than the initial amount.

**Deferred Retirement Option
Program (DROP)**

Allows accumulation of pension after 20 years of County service. DROP period must be between three and six years (with the sixth year requiring approval for certain job classifications). Interest shall be credited to the DROP account on a monthly basis at an interest rate of 0.34745%, which provides an effective annual yield of 4.25%.

County Council Bill No. 48-89	Effective 9/13/89
	The previously combined Police and Fire plan was separated into distinct plans for each group. The reduction for retirement prior to age 50 was changed to 0.2% per month from 0.3% per month.
County Council Bill No. 34-92	Effective 6/1/92 through 8/31/92
	Participants age 50 or with at least 20 years of service could elect to retire with an additional pension equal to 1/12 of 2.5% of final earnings for the first 20 years of service, plus 1/12 of 2% of final earnings for each additional year of service. The additional amount could be taken as a pension increase, a lump sum, or as a temporary supplement to age 62. Appropriate actuarial adjustments apply.
County Council Bill No. 66-92	Effective 7/2/92
	The plan was amended to allow normal, unreduced retirement after 20 years of service.
	Employee contributions were increased to 6% from 5%.
	Participants under age 50 were not allowed to retire and receive retirement incentives (under Bill No. 34-92) in addition to unreduced retirement. They could either retire early with the incentives, or normally without the incentives.
State House Bill No. 687	Effective 7/1/90
	County employees were given the opportunity to apply for credit under the County's plan for previous service with the State of Maryland (or a political subdivision of the State).
County Council Bill No. 88-96	Effective 12/4/96
	The previous method of calculating cost of living increase will only apply to benefits accrued as of 1/31/97. The cost of living increase for future benefits is a compound increase equal to 60% of the annual change in the CPI, not to exceed 2.5%. Employees hired, or rehired, on or after 12/4/96 will be Tier Two employees and will have different benefits than current employees.
Recodification	Effective 2/25/2002
	Allows a benefit based on disability leave service and pre-plan military service to be paid over the 70% cap. Normal Retirement was changed to the earlier of 20 years of service or age 50 with 5 years of service. Elimination of Tier 2 benefits. Implemented a Deferred Retirement Option Program (DROP), a voluntary program that provides an alternative way to earn and receive retirement benefits.
County Council Bill No. 66-05	Effective 10/10/2005
	Reduced the contribution percentage for Category II participants from 6% to 5%.
County Council Bill No. 58-07	Effective 10/11/2007
	Reduced the contribution percentage for Category I participants from 6% to 5%.
County Council Bill No. 74-09	Effective 12/11/2009.
	For non-represented members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 3% for determining the average basic pay. Clarified the limits on those entering DROP. The effective annual interest rate for the DROP account changed from 8% to 4.25% for those entering DROP on or after July 1, 2009.
County Council Bill No. 6-10	Effective 4/18/2010
	Provides for a disability benefit for those participants who are totally and permanently disabled as a result of qualified military service.
County Council Bill No. 41-10	Effective 7/1/2010.
	Increased the contribution rate for Police Officers, Police Officer First Class, Police Corporals, and Police Sergeants to 7.25%.
County Council Bill No. 30-12	Effective 2/1/2013

Anne Arundel County Retirement and Pension System
Police Service Retirement Plan - Summary of Major Legislative Changes
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	All participant except for those in the Police Lieutenant classification shall contribute 7.25% of his or her annual basic pay in each calendar year or portion of a calendar year while an active participant in the plan.
County Council Bill No. 67-12	Effective 2/1/2013
	Participant in the Police Lieutenant classification shall contribute 7.25% of his or her annual basic pay in each calendar year or portion of a calendar year while an active participant in the plan.
County Council Bill No. 56-16	Effective 7/1/2016
	Allows for interest to be credited to a DROP member's account in the sixth year of DROP participation. Requires Appointing Authority approval for DROP participation in 6th year for the following classifications: Police Sergeant, Police Lieutenant, Police Captain, Police Major, Deputy Chief or Police Chief.
County Council Bill No. 78-17	Effective: 7/1/2017
	Eliminates the reduction in benefit for DROP retirees if they are reemployed in any capacity that meets the exceptions set forth in 5-1-203(c)(1). Also adds an exception under 5-1-203(c) for any retirees (including DROP participants) who are reemployed into a grant funded contractual position under 802(a)(17) of the Charter.

Solvency Test

2011 to 2020

Actuarial Valuation Date	Active Member Contribution (1) ¹	Retirees and Beneficiaries Inactive and Pay- Status Members (2)	Active Members Employer Financed Portion (3)	Actuarial Value of Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
					(1)	(2)	(3)
1/1/2011	20,787,782	310,212,178	171,001,709	435,891,125	100%	100%	61.3%
1/1/2012	21,860,897	325,991,800	178,302,281	430,342,941	100%	100%	46.3%
1/1/2013	22,454,626	357,544,534	175,292,937	420,675,703	100%	100%	23.2%
1/1/2014	24,465,302	364,953,146	186,969,390	452,075,806	100%	100%	33.5%
1/1/2015	26,791,267	381,682,950	205,142,796	481,633,710	100%	100%	35.7%
1/1/2016	28,952,829	400,644,387	205,420,231	498,491,072	100%	100%	33.5%
1/1/2017	29,153,543	410,045,649	213,498,527	517,010,261	100%	100%	36.4%
1/1/2018	30,742,890	430,537,535	223,106,492	540,292,183	100%	100%	35.4%
1/1/2019	31,312,419	448,094,223	228,963,359	553,866,523	100%	100%	32.5%
1/1/2020	31,595,788	463,770,764	236,284,457	575,083,049	100%	100%	33.7%

Analysis of Financial Experience

Reasons for Change in the Unfunded Accrued Liability

The unfunded accrued liability increased from \$154,503,478 to \$156,567,960. The funded status increased from 78.2% to 78.6%.

Reasons for Change in Contribution Rates

The employer contribution rate decreased from 43.0% for the fiscal year ending June 30, 2020 to 42.6% for the fiscal year ending June 30, 2021. The decrease of 0.4% is due to the following reasons:

Investment Performance	1.2%
Pay Increases	0.2%
New Entrants/Change in Normal Cost	0.5%
COLA	-0.4%
Change in Expenses	0.0%
Assumption and Method Changes	0.0%
Demographics and Other Changes	-1.9%
Total	-0.4%

¹ Does not include contribution balances for any participants currently in DROP

Net Pension Liability of the County

The components of the net pension liability of the County at December 31, 2019, were as follows:

Total pension liability	\$ 759,568,512
Plan fiduciary net position	<u>(581,733,564)</u>
County's net pension liability	<u>\$ 177,834,948</u>
Plan fiduciary net position as a percentage of the total pension liability	76.59%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of December 31, 2019 using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	Rates vary by participant age
Investment rate of return	7.45%, net of pension plan investment expense, including inflation
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A five-year set forward is used for post-disability mortality.

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Sensitivity of the net pension liability to changes in the discount rate

	<i>1% Decrease</i> <u>6.45%</u>	<i>Current</i> <i>Discount Rate</i> <u>7.45%</u>	<i>1% Increase</i> <u>8.45%</u>
County's net pension liability	\$ 273,046,374	\$ 177,834,948	\$ 100,037,960

Anne Arundel County Retirement and Pension System
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Changes in the Net Pension Liability

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at 12/31/18	\$ 722,742,281	\$ 516,505,185	\$ 206,237,096
Changes for the year:			
Service cost	13,063,652		13,063,652
Interest	52,473,853		52,473,853
Changes of benefit terms	-		-
Differences between expected and actual experience	(2,016,599)		(2,016,599)
Changes of assumptions	10,095,844		10,095,844
Contributions - employer		23,093,892	(23,093,892)
Contributions - member		3,669,199	(3,669,199)
Net investment income		75,785,996	(75,785,996)
Benefit payments, including refunds of member contributions	(36,790,519)	(36,790,519)	-
Administrative expense		(530,188)	530,188
Other		-	-
Net Changes	<u>36,826,231</u>	<u>65,228,380</u>	<u>(28,402,149)</u>
Balances at 12/31/19	<u>\$ 759,568,512</u>	<u>\$ 581,733,565</u>	<u>\$ 177,834,947</u>

Anne Arundel County Retirement and Pension System
Police Service Retirement Plan – Actuarial Information
December 31, 2019

Changes in the County's Net Pension Liability and Related Ratios

Last 10 Fiscal Years

(Dollar amounts in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Total pension liability										
Service cost	\$ 13,064	\$ 12,826	\$ 12,689	\$ 12,057	\$ 12,258	\$ 10,951				
Interest	52,474	50,963	48,563	47,032	45,473	41,480				
Changes of benefit terms	-	-	-	-	-	-				
Differences between expected and actual experience	(2,017)	(2,591)	6,202	(4,527)	(4,693)	12,801				
Changes of assumptions	10,096	-	-	-	-	18,331				
Benefit payments, including refunds of member contributions	(36,791)	(35,938)	(34,950)	(33,357)	(31,134)	(29,507)				
Net change in total pension liability	36,826	25,261	32,504	21,205	21,903	54,055				
Total pension liability - beginning	722,742	697,482	664,978	643,773	621,870	567,815				
Total pension liability - ending (a)	<u>\$ 759,569</u>	<u>\$ 722,742</u>	<u>\$ 697,482</u>	<u>\$ 664,978</u>	<u>\$ 643,773</u>	<u>\$ 621,870</u>				
Plan fiduciary net position										
Contributions - employer	\$ 23,094	\$ 21,934	\$ 20,931	\$ 20,411	\$ 19,560	\$ 18,870				
Contributions - member	3,669	3,372	3,250	3,158	3,104	2,950				
Net investment income	75,786	(25,860)	78,155	33,500	(7,869)	21,813				
Benefit payments, including refunds of member contributions	(36,791)	(35,938)	(34,950)	(33,357)	(31,134)	(29,507)				
Administrative expense	(530)	(464)	(445)	(417)	(423)	(418)				
Other	-	-	-	-	-	-				
Net change in plan fiduciary net position	\$ 65,228	\$ (36,956)	\$ 66,941	\$ 23,295	\$ (16,762)	\$ 13,707				
Plan fiduciary net position - beginning	516,505	553,461	486,520	463,225	479,988	466,281				
Plan fiduciary net position - ending (b)	<u>\$ 581,734</u>	<u>\$ 516,505</u>	<u>\$ 553,461</u>	<u>\$ 486,520</u>	<u>\$ 463,225</u>	<u>\$ 479,988</u>				
County's net pension liability - ending (a)-(b)	<u>\$ 177,835</u>	<u>\$ 206,237</u>	<u>\$ 144,020</u>	<u>\$ 178,458</u>	<u>\$ 180,547</u>	<u>\$ 141,882</u>				
Plan fiduciary net position as a percentage of the total pension liability	76.59%	71.46%	79.35%	73.16%	71.95%	77.18%				
Covered payroll	\$ 53,035	\$ 48,322	\$ 45,989	\$ 44,894	\$ 43,879	\$ 42,960				
County's net pension liability as a percentage of covered payroll	335.32%	426.79%	313.16%	397.51%	411.47%	330.26%				
Expected average remaining service years of all participants	4	4	4	4	4	4				

Information for FY2013 and earlier is not available

Notes to Schedule:

Benefit changes: There are no benefit changes reflected in the current schedule.

Changes of assumptions: The following assumptions were changed: interest rate, mortality, retirement rates, and turnover rates. Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Covered Payroll: Does not include pay for members in DROP.

Anne Arundel County Retirement and Pension System
Police Service Retirement Plan – Actuarial Information
December 31, 2019

Schedule of County Contributions

Last 10 Fiscal Years

(Dollar amounts in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	\$ 23,094	\$ 21,934	\$ 20,931	\$ 20,411	\$ 19,560	\$ 18,870				
Contributions in relation to the actuarially determined contribution	23,094	21,934	20,931	20,411	19,560	18,870	Information for FY2013 and earlier is not available			
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 0</u>	<u>\$ -</u>	<u>\$ -</u>				
Covered payroll (excluding members in DROP)	\$ 53,035	\$ 48,322	\$ 45,989	\$ 44,894	\$ 43,879	\$ 42,960				
Contributions as a percentage of covered payroll	43.54%	45.39%	45.51%	45.46%	44.58%	43.92%				

Notes to Schedule

Valuation date:

Actuarially determined contribution amounts are calculated as of each January 1 for the upcoming County fiscal year beginning July 1. Actuarial valuations are performed every year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Projected Unit Credit
Amortization method	Level percent of payroll (closed), increasing 3.0% per year.
Remaining amortization period	Remaining Amortization periods range from 14 to 23 years.
Asset valuation method	5-year smoothed market
Inflation	3.00%
Salary increases	Rates vary by participant age
Investment rate of return	7.45%, net of pension plan investment expense, including inflation
Retirement age	Rates vary by participant age and service
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A five-year set forward is used for post-disability mortality.

Attachment C

Fire Service Retirement Plan

A. Method Used for Funding Purposes

This valuation was performed using the projected unit credit cost method. The contribution equals the sum of the normal cost and the amount necessary to amortize any actuarial gains/(losses) over closed periods. Effective January 1, 2014, new bases due to changes in actuarial assumptions or differences between actual and expected experience are amortized over closed periods of 20 years. New bases due to changes in plan benefits are amortized over the expected future working lifetime of affected employees. Amortization payments increase 3.0% per year.

B. Asset Valuation Method

The actuarial value of assets is determined by spreading the asset gain or loss over a 5-year period. The asset gain or loss is the amount by which the actual market value investment return differs from the expected market value investment return. The method was effective with the 1/1/2011 actuarial valuation. The Actuarial Value of Assets recognizes adjustments resulting from an audit.

There is a six-month lag between the valuation and the fiscal year. The 2020 valuation determines the County contribution due for the fiscal year ending June 30, 2021.

C. Valuation Procedures

Generally, the plan provides a 100% survivor benefit to the spouse at the time of the retiree's death. This allows for post retirement marriages. We have valued the forms of payment originally coded in the data or based this on marital status at time of retirement (generally a 100% survivor benefit but not always). 80% of employees and 70% of current retired and disabled members are assumed married. Males are assumed to be four years older than their spouses.

D. Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the Plan for purposes of determining pension expense and liabilities under GASB. These assumptions are used for all members eligible to receive benefits under the Fire Plan provisions.

Economic

Investment Return 7.45% compounded annually net of investment expenses (3.0% inflation and 4.45% real return) effective January 1, 2019.

Salary Increases A graded schedule is used. See Earnings Progression Table.

Cost of Living Adjustment Benefits accrued before Bill 88-96 are assumed to increase by 3.0% of the current benefit each year.
Benefits accrued after Bill 88-96 are assumed to increase by 1.8% of current benefit each year.

Other

Mortality Healthy: RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018.

Disabled: RP-2014 Blue Collar Mortality Table for males and females set forward five years and projected generationally using scale MP-2018.

Projection to the year of the valuation using scale MP-2018 is assumed to be current experience. The generational projection beyond the valuation date is to account for future mortality improvements.

Withdrawal See Table of Sample Rates.

Disability See Table of Sample Rates. 75% of disablement is assumed to be duty-related.

Administrative Expenses The average of actual expenses for the two years preceding the valuation date, rounded to the nearest thousand.

Insured Benefits Our calculations reflect that some benefits have already been purchased.

Retirement Rates

Sample Rates:

For GASB68 accounting	Age	Years of <u>Service</u>			
		<u>20</u>	<u>22</u>	<u>24</u>	<u>25+</u>
	40	5.00%	5.00%	20.00%	100.00%
	45	5.00%	5.00%	20.00%	100.00%
	50	10.00%	10.00%	10.00%	100.00%
	55	15.00%	10.00%	15.00%	100.00%
	59	23.00%	23.00%	23.00%	100.00%
	62	100.00%	100.00%	100.00%	100.00%

Percentage Married 80% of employees and 70% of current retirees and disabled retirees are assumed married.

Age Difference Males are assumed to be four years older than their spouses.

Military Service Active liabilities (which depend on credited service) are loaded by 3.25% to account for future crediting of military service.

Disability Leave Service credit for benefit formula purposes is increased by 1.75% to account for disability leave, which is converted to service credit at retirement.

Table of Sample Mortality Rates (2020)				
Age	Healthy Mortality		Disabled Mortality	
	Males	Females	Males	Females
20	0.07%	0.02%	0.07%	0.02%
25	0.07%	0.02%	0.06%	0.02%
30	0.06%	0.02%	0.07%	0.03%
35	0.07%	0.03%	0.10%	0.05%
40	0.10%	0.05%	0.16%	0.09%
45	0.16%	0.09%	0.26%	0.13%
50	0.26%	0.13%	0.38%	0.19%
55	0.38%	0.19%	0.64%	0.31%
60	0.64%	0.31%	1.23%	0.50%
65	1.23%	0.50%	2.09%	0.85%

Attained Age	Table of Sample Decrement Rates	
	Percentage	
	Disability	Withdrawal
20	0.2203%	7.33%
25	0.2203	5.68
30	0.2203	3.44
35	0.3259	1.77
40	0.6725	1.35
45	1.1245	0.97
50	1.6548	0.00
55	0.0000	0.00
60	0.0000	0.00
65	0.0000	0.00

Earnings Progression	
Attained Age	Percentage Increase at Attained Age
20	6.5%
25	6.0
30	5.5
35	5.0
40	4.5
45	4.0
50	4.0

Anne Arundel County Retirement and Pension System
Fire Service Retirement Plan – Schedules of Member Valuation Data
December 31, 2019

Active Members

Valuation Date	Number	Annual Payroll (Jan. 1 Rate)	Average Annual Pay	% Increase in Average Pay
January 1, 2011	792 ¹	47,840,812	60,405	1.0%
January 1, 2012	752 ²	45,673,006	60,735	0.5%
January 1, 2013	713 ³	43,361,686	60,816	0.1%
January 1, 2014	754 ⁴	44,950,885	59,617	(2.0%)
January 1, 2015	780 ⁵	48,549,950	62,244	4.41%
January 1, 2016	832 ⁶	49,181,953	59,113	(5.03%)
January 1, 2017	837 ⁷	50,412,257	60,230	1.89%
January 1, 2018	835 ⁸	51,766,876	61,996	2.93%
January 1, 2019	840 ⁹	54,769,258	65,201	5.17%
January 1, 2020	852 ¹⁰	58,710,040	68,909	5.69%

¹ Includes 103 members in DROP.

² Includes 121 members in DROP.

³ Includes 127 members in DROP.

⁴ Includes 115 members in DROP.

⁵ Includes 87 members in DROP.

⁶ Includes 59 members in DROP.

⁷ Includes 45 members in DROP.

⁸ Includes 51 members in DROP.

⁹ Includes 60 members in DROP.

¹⁰ Includes 73 members in DROP.

Anne Arundel County Retirement and Pension System
Fire Service Retirement Plan – Schedules of Member Valuation Data
December 31, 2019

Members Receiving Benefits

Year	Number at Beginning of Year	Additions	Decreases	Number at End of Year
1/1/10 to 12/31/10	414	18	(5)	427
1/1/11 to 12/31/11	427	15	(3)	439
1/1/12 to 12/31/12	439	24	(4)	459
1/1/13 to 12/31/13	459	27	(5)	481
1/1/14 to 12/31/14	481	45	(9)	517
1/1/15 to 12/31/15	517	38	(5)	550
1/1/16 to 12/31/16	550	49	(8)	591
1/1/17 to 12/31/17	591	31	(6)	616
1/1/18 to 12/31/18	616	25	(15)	626
1/1/19 to 12/31/19	626	12	(12)	626

Summary of Retirees and Beneficiaries Added to and Removed from Rolls

Year Ending	Added to Rolls		Removed from Rolls		Rolls End of Year		% Increase in Average Annual Allowance	Average Annual Allowance
	Number	Annual Allowance ¹¹	Number	Annual Allowance	Number	Annual Allowance		
12/31/2010	18	\$760,013	5	\$215,742	427	\$16,405,497	0.28%	\$38,420
12/31/2011	15	\$926,323	3	\$95,933	439	\$17,235,887	2.19%	\$39,262
12/31/2012	24	\$1,419,348	4	\$53,068	459	\$18,602,167	3.22%	\$40,528
12/31/2013	27	\$1,516,284	5	\$182,136	481	\$19,936,315	2.27%	\$41,448
12/31/2014	45	\$2,426,712	9	\$307,354	517	\$22,055,673	2.93%	\$42,661
12/31/2015	38	\$2,037,484	5	\$208,634	550	\$23,884,523	1.79%	\$43,426
12/31/2016	49	\$2,058,968	8	\$179,838	591	\$25,763,653	0.39%	\$43,593
12/31/2017	31	\$1,862,863	6	\$217,350	616	\$27,409,166	2.07%	\$44,495
12/31/2018	25	\$1,781,286	15	\$499,156	626	\$28,691,296	3.01%	\$45,833
12/31/2019	12	\$1,042,384	12	\$430,679	626	\$29,303,001	2.13%	\$46,810

¹¹ Includes COLAs for all retirees

Compensation	For purposes of the pension plan, compensation is the regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses and commissions.
Final Earnings	The average of the highest 3 years of all basic pays.
Eligibility Requirements	Full-time employees occupying the classes of work listed below and making contributions to the plan will be eligible to participate in the pension plan upon hire: • Fire Fighter II • Fire Fighter III • Fire Fighter/Cardiac Rescue Technician • Fire Fighter/Emergency Medical Technician Paramedic • Fire Lieutenant • Fire Captain • Fire Battalion Chief • Fire Division Chief • Deputy Fire Chief • Fire Chief, by election
Employee Contributions	7.25% of compensation for all participants.
Retirement Date	
Normal Retirement	The first of the month coincident with or next following the participant's 50 th birthday and 5 years of service or the completion of 20 years of service.
Postponed Retirement	A participant may work beyond his normal retirement date and may subsequently retire on the first of any month.
Retirement Benefits	
Normal Retirement	2.5% of final earnings for each year of service up to 20 years plus 2.0% of final earnings per year of service in excess of 20 years (maximum 70% plus 2% times unused disability credit and pre-employment military service credit.)
Postponed Retirement	Same as normal retirement but based on continued accrual past normal retirement date.
Normal Form of Payment	For single participants, monthly life annuity with payments guaranteed for 5 years. For married participants, unreduced 100% joint and survivor annuity with payments guaranteed for 5 years.
Disability	
Eligibility	Totally and permanently disabled (except as the result of activities specified in the Country code) regardless of length of service.
Duty-Related	The greater of the accrued benefit or 66-2/3% of final earnings, payable immediately, unreduced.
Non-Duty Related	The greater of the accrued benefit or 20% of final earnings, payable immediately, unreduced.

<i>Termination of Employment Death Benefits</i>	Return of employee contributions with 3.00% interest.
Married	Duty-Related: Greater of accrued benefit or 66-2/3% of final earnings. Non-duty Related: Accrued Benefit.
Unmarried	Return of employee contributions with 3.00% interest plus, if one or more years of service, a lump sum of 50% of final earnings.
<i>Cost of Living Increase</i> (for benefits accrued as of 1/31/97)	Retiree benefits are adjusted each year. The revised benefit amount is the lesser of: • Base benefit multiplied by ratio of current 12-month average CPI to 12-month average CPI at retirement. • Prior year benefit increased by 4%. Benefit payments can be reduced or increased. However, the amount can never be less than the initial benefit amount.
<i>Cost of Living Increase</i> (for benefits accrued after 1/31/97)	Retiree benefits are adjusted each year. The revised benefit amount is the lesser of: • Prior year benefit multiplied by 60% of the increase in current March CPI from March CPI for prior year. • Prior year benefit increased by 2.5%. Benefit payments can be reduced or increased. However, the amount can never be less than the initial benefit amount.
Deferred Retirement Option Program (DROP)	Allows accumulation of pension after 20 years of County service. DROP period must be between three and six years (with the sixth year requiring approval for certain job classifications). Interest shall be credited to the DROP account on a monthly basis at an interest rate of 0.34745%, which provides an effective annual year of 4.25%. No interest will be credited in the sixth year of DROP for members in the classification of Battalion Chief.

County Council Bill No. 48-89	Effective 9/13/89
	The previously combined Police and Fire plan was separated into distinct plans for each group.
	The reduction for retirement prior to age 50 was changed to 0.2% per month from 0.3% per month.
County Council Bill No. 34-92	Effective 6/1/92 through 8/31/92
	Participants age 50 or with at least 20 years of service could elect to retire with an additional pension equal to 1/12 of 2.5% of final earnings for the first 20 years of service, plus 1/12 of 2% of final earnings for each additional year of service. The additional amount could be taken as a pension increase, a lump sum, or as a temporary supplement to age 62. Appropriate actuarial adjustments apply.
State House Bill No. 687	Effective 7/1/90
	County employees were given the opportunity to apply for credit under the County's plan for previous service with the State of Maryland (or a political subdivision of the State).
County Council Bill No. 88-96	Effective 12/4/96
	The previous method of calculating cost of living increase will only apply to benefits accrued as of 1/31/97. The cost of living increase for future benefits is a compound increase equal to 60% of the annual change in the CPI, not to exceed 2.5%. Employees hired, or rehired, on or after 12/4/96 will be Tier Two employees and will have different benefits than current employees.
County Council Bill No. 80-00 Recodification	Effective 2/25/2002
	Allows a benefit based on disability leave service and pre-plan military service to be paid over the 70% cap. Normal Retirement was changed to the earlier of 20 years of service or age 50 with 5 years of service. Elimination of Tier 2 benefits. Implemented a Deferred Retirement Option Program (DROP), a voluntary program that provides an alternative way to earn and receive retirement benefits (retroactive to 1/1/2001).
County Council Bill No. 74-09	Effective 12/11/2009
	For non-represented members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 3% for determining the final average basic pay. For represented members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 5% for determining the final average basic pay.
County Council Bill No. 6-10	Effective 4/18/2010
	Provides for a disability benefit for those participants who are totally and permanently disabled as a result of qualified military service.
County Council Bill No. 41-10	Reduced the DROP interest rate from 8 % to 4.25%. Increased the contribution rate for all but Battalion Chief, Division Chief, Deputy Chief and Fire Chief to 7.25%.
County Council Bill No. 98-12	Effective 5/13/2013.
	Changed the definition of "final average basic pay" from highest 3 out of the last 5 years basic pays to highest 3 of all basic pays.
County Council Bill No. 30-12	Effective 2/1/2013
	All participant shall contribute 7.25% of his or her annual basic pay in each calendar year or portion of a calendar year while an active participant in the plan.
County Council Bill No. 66-18	Effective 9/3/2018
	Except for Battalion Chiefs, allows for interest to be credited to a DROP member's account in the sixth year of DROP participation, for members entering their sixth year in DROP after July 1, 2018.

Solvency Test

2011 to 2020

Actuarial Valuation Date	Active Member Contribution (1) ¹	Retirees and Beneficiaries Inactive and Pay- Status Members (2)	Active Members Employer Financed Portion (3)	Actuarial Value of Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
					(1)	(2)	(3)
1/1/2011	18,426,718	231,165,590	214,897,299	425,830,155	100%	100%	82.0%
1/1/2012	18,980,755	241,688,369	225,426,623	426,196,539	100%	100%	73.4%
1/1/2013	20,011,772	259,809,098	230,649,782	426,659,036	100%	100%	63.7%
1/1/2014	21,692,514	278,481,205	241,904,214	462,235,880	100%	100%	67.0%
1/1/2015	24,732,788	311,351,876	231,670,080	490,533,983	100%	100%	66.7%
1/1/2016	27,679,531	335,464,387	211,631,903	503,389,792	100%	100%	66.3%
1/1/2017	29,579,980	358,058,086	202,630,706	516,044,681	100%	100%	63.4%
1/1/2018	30,315,919	376,991,732	202,482,078	534,987,849	100%	100%	63.1%
1/1/2019	31,349,277	389,664,773	218,448,234	546,237,670	100%	100%	57.3%
1/1/2020	32,739,814	392,274,171	247,342,807	568,443,867	100%	100%	58.0%

Analysis of Financial Experience

Reasons for Change in the Unfunded Accrued Liability

The unfunded accrued liability increased from \$93,224,614 to \$103,912,925. The funded status decreased from 85.4% to 84.5%.

Reasons for Change in Contribution Rates

The employer contribution rate increased from 34.5% for the fiscal year ending June 30, 2020 to 37.7% for the fiscal year ending June 30, 2021. The increase of 3.2% is due to the following reasons:

Investment Performance	1.2%
Pay Increases	1.5%
New Entrants/Change in Normal Cost	0.5%
COLA	-0.3%
Change in Expenses	0.0%
Assumption and Method Changes	2.5%
Demographics and Other Changes	-2.2%
Total	3.2%

¹ Does not include contribution balances for any participants currently in DROP

Net Pension Liability of the County

The components of the net pension liability of the County at December 31, 2019, were as follows:

Total pension liability	\$ 691,561,715
Plan fiduciary net position	(575,886,891)
County's net pension liability	<u>\$ 115,674,824</u>
Plan fiduciary net position as a percentage of the total pension liability	83.27%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of December 31, 2019 using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	Rates vary by participant age
Investment rate of return	7.45%, net of pension plan investment expense, including inflation
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A five-year set forward is used for post-disability mortality.

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Sensitivity of the net pension liability to changes in the discount rate

	<u>1% Decrease</u> <u>6.45%</u>	<u>Current</u> <u>Discount Rate</u> <u>7.45%</u>	<u>1% Increase</u> <u>8.45%</u>
County's net pension liability	\$ 202,779,637	\$ 115,674,824	\$ 44,249,266

Anne Arundel County Retirement and Pension System
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Changes in the Net Pension Liability

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at 12/31/18	\$ 652,013,902	\$ 509,828,407	\$ 142,185,495
Changes for the year:			
Service cost	12,611,840		12,611,840
Interest	47,453,896		47,453,896
Changes of benefit terms	-		-
Differences between expected and actual experience	(573,196)		(573,196)
Changes of assumptions	10,152,984		10,152,984
Contributions - employer		17,637,120	(17,637,120)
Contributions - member		3,652,415	(3,652,415)
Net investment income		75,388,446	(75,388,446)
Benefit payments, including refunds of member contributions	(30,097,711)	(30,097,711)	-
Administrative expense		(521,786)	521,786
Other		-	-
Net Changes	<u>39,547,813</u>	<u>66,058,484</u>	<u>(26,510,671)</u>
Balances at 12/31/19	<u>\$ 691,561,715</u>	<u>\$ 575,886,891</u>	<u>\$ 115,674,824</u>

Anne Arundel County Retirement and Pension System
Fire Service Retirement Plan – Actuarial Information
December 31, 2019

Changes in the County's Net Pension Liability and Related Ratios

Last 10 Fiscal Years

(Dollar amounts in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Total pension liability										
Service cost	\$ 12,612	\$ 11,785	\$ 11,556	\$ 11,102	\$ 10,339	\$ 9,184				
Interest	47,454	45,537	43,670	42,294	41,924	38,949				
Changes of benefit terms	-	-	-	-	-	-				
Differences between expected and actual experience	(573)	3,521	2,210	(1,552)	(14,630)	3,679				
Changes of assumptions	10,153	-	-	-	-	18,028				
Benefit payments, including refunds of member contributions	(30,098)	(31,973)	(33,129)	(33,868)	(31,520)	(28,823)				
Net change in total pension liability	39,548	28,869	24,309	17,976	6,112	41,016				
Total pension liability - beginning	652,014	623,144	598,836	580,860	574,748	533,731				
Total pension liability - ending (a)	<u>\$ 691,562</u>	<u>\$ 652,014</u>	<u>\$ 623,144</u>	<u>\$ 598,836</u>	<u>\$ 580,860</u>	<u>\$ 574,748</u>				
Plan fiduciary net position										
Contributions - employer	\$ 17,637	\$ 15,704	\$ 14,664	\$ 14,591	\$ 15,122	\$ 15,899				
Contributions - member	3,652	3,524	3,441	3,257	3,050	2,778				
Net investment income	75,388	(25,208)	77,992	33,899	(7,744)	22,688				
Benefit payments, including refunds of member contributions	(30,098)	(31,973)	(33,129)	(33,868)	(31,520)	(28,823)				
Administrative expense	(522)	(430)	(448)	(428)	(436)	(423)				
Other	-	-	-	-	-	-				
Net change in plan fiduciary net position	<u>\$ 66,058</u>	<u>\$ (38,382)</u>	<u>\$ 62,520</u>	<u>\$ 17,451</u>	<u>\$ (21,528)</u>	<u>\$ 12,119</u>				
Plan fiduciary net position - beginning	509,828	548,211	485,690	468,239	489,767	477,648				
Plan fiduciary net position - ending (b)	<u>\$ 575,887</u>	<u>\$ 509,828</u>	<u>\$ 548,211</u>	<u>\$ 485,690</u>	<u>\$ 468,239</u>	<u>\$ 489,767</u>				
County's net pension liability - ending (a)-(b)	<u>\$ 115,675</u>	<u>\$ 142,185</u>	<u>\$ 74,934</u>	<u>\$ 113,145</u>	<u>\$ 112,621</u>	<u>\$ 84,981</u>				
Plan fiduciary net position as a percentage of the total pension liability	83.27%	78.19%	87.97%	81.11%	80.61%	85.21%				
Covered payroll	\$ 51,011	\$ 48,728	\$ 46,954	\$ 46,228	\$ 43,838	\$ 40,476				
County's net pension liability as a percentage of covered payroll	226.76%	291.79%	159.59%	244.76%	256.90%	209.95%				
Expected average remaining service years of all participants	6	6	6	6	5	5				

Notes to Schedule:

Benefit changes: There are no benefit changes reflected in the current schedule.

Changes of assumptions: The following assumptions were changed: interest rate, mortality, retirement rates, turnover rates, and disability rates. Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Covered Payroll: Does not include pay for members in DROP.

Anne Arundel County Retirement and Pension System
Fire Service Retirement Plan – Actuarial Information
December 31, 2019

Schedule of County Contributions

Last 10 Fiscal Years

(Dollar amounts in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	\$ 17,637	\$ 15,704	\$ 14,664	\$ 14,591	\$ 15,122	\$ 15,899				
Contributions in relation to the actuarially determined contribution	17,637	15,704	14,664	14,591	15,122	15,899	Information for FY2013 and earlier is not available			
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>				
Covered payroll (excluding members in DROP)	\$ 51,011	\$ 48,728	\$ 46,954	\$ 46,228	\$ 43,838	\$ 40,476				
Contributions as a percentage of covered payroll	34.57%	32.23%	31.23%	31.56%	34.49%	39.28%				

Notes to Schedule

Valuation date:

Actuarially determined contribution amounts are calculated as of each January 1 for the upcoming County fiscal year beginning July 1. Actuarial valuations are performed every year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Projected Unit Credit
Amortization method	Level percent of payroll (closed), increasing 3.0% per year.
Remaining amortization period	Remaining Amortization periods range from 14 to 23 years.
Asset valuation method	5-year smoothed market
Inflation	3.00%
Salary increases	Rates vary by participant age
Investment rate of return	7.45%, net of pension plan investment expense, including inflation
Retirement age	Rates vary by participant age and service
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A five-year set forward is used for post-disability mortality.

Attachment D

Detention Officers' and Deputy Sheriffs' Retirement Plan

A. Method Used for Funding Purposes

This valuation was performed using the projected unit credit cost method. The contribution equals the sum of the normal cost and the amount necessary to amortize any actuarial gains/(losses) over closed periods. Effective January 1, 2014, new bases due to changes in actuarial assumptions or differences between actual and expected experience are amortized over closed periods of 20 years. New bases due to changes in plan benefits are amortized over the expected future working lifetime of affected employees. Amortization payments increase 3.0% per year.

B. Asset Valuation Method

The actuarial value of assets is determined by spreading the asset gain or loss over a 5-year period. The asset gain or loss is the amount by which the actual market value investment return differs from the expected market value investment return. The method was effective with the 1/1/2011 actuarial valuation. The Actuarial Value of Assets recognizes adjustments resulting from an audit.

There is a six-month lag between the valuation and the fiscal year. The 2020 valuation determines the County contribution due for the fiscal year ending June 30, 2021.

C. Valuation Procedures

Active participants who terminate prior to age 40 are assumed to elect to receive a refund of employee contributions with interest. Employees who terminate at or after age 40 are assumed to receive their vested benefit at normal retirement date.

D. Actuarial Assumptions

The following assumptions were used in valuing the liabilities and benefits under the Plan for purposes of determining pension expense and liabilities under GASB. These assumptions are used for all members eligible to receive benefits under the Detention Officers and Deputy Sheriffs' Retirement Plan provisions.

Economic

Investment Return	7.45% compounded annually net of investment expenses (3.0% inflation and 4.45% real return) effective January 1, 2014.
Salary Increases	A graded schedule is used. See Earnings Progression Table.
Cost of Living Adjustment	Benefits accrued before Bill 88-96 are assumed to increase by 3.0% of the original benefit each year. Benefits accrued after Bill 88-96 are assumed to increase by 1.8% of the current benefit each year.

Other

Mortality	Healthy: RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. Disabled: RP-2014 Blue Collar Mortality Table for males and females set forward five years and projected generationally using scale MP-2018. Projection to the year of the valuation using scale MP-2018 is assumed to be current experience. The generational projection beyond the valuation date is to account for future mortality improvements.
Withdrawal	See Table of Sample Rates.
Disability	See Table of Sample Rates. 75% of disablement is assumed to be duty-related.

Administrative Expenses The average of actual expenses for the two years preceding the valuation date, rounded to the nearest thousand.

Retirement Rates

For GASB 68 accounting (Category I)	Age	Annual Rate Years of Service			
		<u>Less than 20</u>	<u>20</u>	<u>21 or more but less than 23</u>	<u>23 or more</u>
	40-49	N/A	25%	15%	100%
	50	10%	40%	20%	100%
	51-54	7%	40%	20%	100%
	55-59	10%	40%	20%	100%
	60-61	100%	40%	20%	100%
	62	100%	100%	100%	100%

(Category II)

Age	Annual Rate Years of Service			
	<u>Less than 20</u>	<u>20</u>	<u>21-29</u>	<u>30 or more</u>
<50	N/A	5%	2%	100%
50	10%	30%	30%	100%
51-59	10%	10%	10%	100%
60-64	7%	14%	14%	100%
>64	100%	100%	100%	100%

Percentage Married Males – 80%; Females – 80%

Age Difference Males are assumed to be four years older than their spouses.

Military Service Active liabilities (which depend on credited service) are loaded by 3.25% to account for future crediting of military service.

Disability Leave Service credit for benefit formula purposes is increased by 1.75% to account for disability leave which is converted to service credit at retirement.

In addition, it is assumed that participants with 30 or more years of service will have credit for 1 year of combined Disability Leave and Military Service.

Table of Sample Mortality Rates (2020)				
Age	Healthy Mortality		Disabled Mortality	
	Males	Females	Males	Females
20	0.07%	0.02%	0.07%	0.02%
25	0.07%	0.02%	0.06%	0.02%
30	0.06%	0.02%	0.07%	0.03%
35	0.07%	0.03%	0.10%	0.05%
40	0.10%	0.05%	0.16%	0.09%
45	0.16%	0.09%	0.26%	0.13%
50	0.26%	0.13%	0.38%	0.19%
55	0.38%	0.19%	0.64%	0.31%
60	0.64%	0.31%	1.23%	0.50%
65	1.23%	0.50%	2.09%	0.85%

Attained Age		
	Table of Sample Disability Rates	
	Percentage	
20		0.147%
25		0.147%
30		0.147%
35		0.217%
40		0.448%
45		0.750%
50		1.103%
55		0.000%
60		0.000%
64		0.000%

Attained Age	Table of Sample Withdrawal Rates			
	Less Than 10 Years of Service		10 or more Years of Service	
	Male Percentage	Female Percentage	Male Percentage	Female Percentage
20	14.24%	21.56%	6.50%	13.13%
25	10.33%	16.17%	4.72%	9.84%
30	7.83%	12.94%	3.58%	7.88%
35	5.69%	9.71%	2.60%	5.91%
40	3.92%	7.12%	1.79%	4.33%
45	2.14%	4.53%	0.98%	2.76%
50	0.00%	0.00%	0.00%	0.00%

Earnings Progression	
Attained Age	Percentage Increase at Attained Age
20	6.00%
25	6.00
30	5.50
35	5.25
40	4.75
45	4.25
50	4.25

Anne Arundel County Retirement and Pension System
 Detention Officers' and Deputy Sheriffs' Retirement Plan – Schedules of Member Valuation Data
 December 31, 2019

Active Members

Valuation Date	Number	Annual Payroll (Jan. 1 Rate)	Average Annual Pay	% Increase in Average Pay
January 1, 2011	354	19,310,216	54,549	1.0%
January 1, 2012	347	18,760,664	54,065	(0.9%)
January 1, 2013	338	17,896,574	52,948	(2.1%)
January 1, 2014	342	18,132,868	53,020	0.1%
January 1, 2015	345	19,775,644	57,321	8.1%
January 1, 2016	350 ¹	19,974,632	57,070	(0.4%)
January 1, 2017	358 ²	21,000,562	58,661	2.79%
January 1, 2018	345 ³	21,268,895	61,649	5.09%
January 1, 2019	343 ⁴	21,444,603	62,521	1.41%
January 1, 2020	380 ⁵	24,504,133	64,485	3.14%

¹ Includes 8 members in DROP.

² Includes 15 members in DROP.

³ Includes 18 members in DROP.

⁴ Includes 21 members in DROP.

⁵ Includes 26 members in DROP.

Members With Deferred Benefits

Year	Number at Beginning of Year	Additions	Decreases	Number at End of Year
1/1/10 to 12/31/10	15	0	(3)	12
1/1/11 to 12/31/11	12	0	(3)	9
1/1/12 to 12/31/12	9	3	0	12
1/1/13 to 12/31/13	12	0	(3)	9
1/1/14 to 12/31/14	9	0	(1)	8
1/1/15 to 12/31/15	8	0	0	8
1/1/16 to 12/31/16	8	1	(2)	7
1/1/17 to 12/31/17	7	0	(1)	6
1/1/18 to 12/31/18	6	0	(2)	4
1/1/19 to 12/31/19	4	2	0	6

Anne Arundel County Retirement and Pension System
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Members Receiving Benefits

Year	Number at Beginning of Year	Additions	Decreases	Number at End of Year
1/1/10 to 12/31/10	146	19	(1)	164
1/1/11 to 12/31/11	164	16	(1)	179
1/1/12 to 12/31/12	179	22	(4)	197
1/1/13 to 12/31/13	197	14	(3)	208
1/1/14 to 12/31/14	208	18	(3)	223
1/1/15 to 12/31/15	223	19	(3)	239
1/1/16 to 12/31/16	239	15	(4)	250
1/1/17 to 12/31/17	250	17	(1)	266
1/1/18 to 12/31/18	266	23	(5)	284
1/1/19 to 12/31/19	284	15	(4)	295

Summary of Retirees and Beneficiaries Added to and Removed from Rolls

Year Ending	Added to Rolls		Removed from Rolls		Rolls End of Year		% Increase in Average Annual Allowance	Average Annual Allowance
	Number	Annual Allowance ⁶	Number	Annual Allowance	Number	Annual Allowance		
12/31/2010	19	\$502,095	1	\$9,390	164	\$4,039,215	1.39%	\$24,629
12/31/2011	16	\$458,651	1	\$17,061	179	\$4,480,805	1.64%	\$25,032
12/31/2012	22	\$701,667	4	\$72,326	197	\$5,110,146	3.63%	\$25,940
12/31/2013	14	\$378,114	3	\$47,509	208	\$5,440,751	0.84%	\$26,157
12/31/2014	18	\$416,562	3	\$46,299	223	\$5,811,014	(0.38%)	\$26,058
12/31/2015	19	\$487,445	3	\$99,378	239	\$6,199,081	(0.46%)	\$25,938
12/31/2016	15	\$332,225	4	\$52,161	250	\$6,479,145	(0.08%)	\$25,917
12/31/2017	17	\$707,232	1	\$30,830	266	\$7,155,547	3.80%	\$26,901
12/31/2018	23	\$874,647	5	\$127,854	284	\$7,902,340	3.43%	\$27,825
12/31/2019	15	\$468,513	4	\$85,850	295	\$8,285,002	0.93%	\$28,085

⁶ Includes COLAs for all retirees

Compensation For purposes of the pension plan, compensation is the regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses and commissions.

Final Earnings The average of the highest 3 years of all basic pays.

Eligibility Requirements Permanent employees who work at least 50% of the time specified for their position. They are either Category I or Category II:

- | | |
|-------------|--|
| Category I | <ul style="list-style-type: none"> • Detention Officer • Detention Corporal • Detention Sergeant • Detention Lieutenant • Detention Captain • Deputy Sheriff I, II, III, and IV |
| Category II | <ul style="list-style-type: none"> • Correctional Program Specialist I and II • Criminal Justice Program Supervisor • Correctional Facility Administrator • Assistant Correctional Facility Administrator • Superintendent of Detention Facilities, by election |

Employee Contributions 6.75% of compensation for all plan members.

Retirement Date

Normal Retirement Category I: The first of the month coincident with or next following the participant's 50th birthday and five years of service or 20 years of service whichever comes first.
 Category II: The first of the month coincident with or next following the participant's 50th birthday and 10 years of service or age 50 with five years of service for members hired before July 1, 2015.

Early Retirement Reduced benefits are available the first of any month coincident with or next following the completion of 20 years of continuous service for Category II.

Postponed Retirement A participant may work beyond his normal retirement date and may subsequently retire on the first of any month.

Retirement Benefits

Normal Retirement 2.5% of final earnings for each year of service up to 20 years plus 2.0% of final earnings per year of service in excess of 20 years (maximum 70% plus 2% times unused disability credit and pre-employment military service credit)

Early Retirement Same as normal retirement but reduced for early commencement.

Postponed Retirement Same as normal retirement but based on continued accrual past normal retirement date.

Normal Form of Payment Monthly life annuity with payments guaranteed for 5 years.

Disability

Eligibility Totally and permanently disabled (except as the result of activities specified in the County code) regardless of length of service.

Duty-Related	The greater of the accrued benefit or 66-2/3% of final earnings, payable immediately, unreduced.
Non-Duty Related	The greater of the accrued benefit or 20% of final earnings, payable immediately, unreduced.

Termination of Employment

Less than 5 years of service	Return of employee contributions with 4.25% interest.
5 years of service or more	For Category II employees hired before July 1, 2015 and all Category I employees, at the discretion of the employee, either a return of contributions with interest or the accrued normal retirement taking into account final earnings and service at date of termination, payable at normal retirement date. For Category II employees hired on or after July 1, 2015, return of employee contributions with interest.
10 years of service or more	For Category II employees hired on or after July 1, 2015, at the discretion of the employee, either a return of contributions with interest or the accrued normal retirement taking into account final earnings and service at date of termination, payable at normal retirement date.

Death Benefits

Married and eligible for retirement	Duty-Related: Greater of accrued benefit or 66-2/3% of final earnings. Non-duty Related: Accrued Benefit.
Unmarried or not eligible for retirement	Return of employee contributions with 4.25% interest plus a lump sum equal to 50% of annual pay.

Cost of Living Increase

(simple, for benefits accrued as of 1/31/97)

- Retiree benefits are adjusted each year. The revised benefit amount is the lesser of:
- Prior year benefit plus base benefit multiplied by increase in current CPI from CPI for prior year.
 - Benefit increased by 4% of original benefit.

Cost of Living Increase

(compound, for benefits accrued after 1/31/97)

- Retiree benefits are adjusted each year. The revised benefit amount is the lesser of:
- Prior year benefit multiplied by 60% of the increase in current March CPI from March CPI for prior year.
 - Prior year Benefit increased by 2.5%.

Deferred Retirement Option Program (DROP)

Allows accumulation of pension after 20 years of County service for Category I employees and certain employees in other job classifications. DROP period must be between three and six years (with years beyond the third requiring approval). Interest shall be credited to the DROP account on a monthly basis at an interest rate of 0.34745%, which provides an effective annual year of 4.25%.

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Detention Officers' and Deputy Sheriffs' Retirement Plan – Summary of Major Legislative Changes
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County Council Bill No. 34-92	Effective 6/1/92 through 8/31/92
	Participants over age 50 or with at least 20 years of service could elect to retire with an additional pension equal to 1/12 of 2.5% of final earnings for the first 20 years of service, plus 1/12 of 2% of final earnings for each additional year of service. The additional amount could be taken as a pension increase, a lump sum, or as a temporary supplement to age 62. Appropriate actuarial adjustments apply.
State House Bill No. 687	Effective 7/1/90
	County employees were given the opportunity to apply for credit under the County's plan for previous service with the State of Maryland (or a political subdivision of the State).
County Council Bill No. 90-93	Effective 12/22/93
	Plan participants are required to pay the full actuarial value for service purchases. Purchases can only be made at retirement. To be eligible, an employee must have 60 months of County service. Existing plan participants must be notified of their right to purchase service under existing law.
County Council Bill No. 94-93	Effective 11/19/93
	All current and future employees shall be 100% vested after 5 years of Credited service.
County Council Bill No. 88-96	Effective 12/4/96
	The previous method of calculating cost of living increase will only apply to benefits accrued as of 1/31/97. The cost of living increase for future benefits is a compound increase equal to 60% of the annual change in the CPI, not to exceed 2.5%. Employees hired, or rehired, on or after 12/4/96 will be Tier Two employees and will have different benefits than current employees.
County Council Bill No. 41-99	Effective 6/15/99
	Employees paid under the deputy sheriff employees pay schedule become members of the Detention Center Plan effective as of January 1, 1999. Service credited under the Employees' Plan will count as credited service in the Detention Center plan and no future benefit will be paid from the Employees' Plan. Assets are transferred from the Employees' Plan to the Detention Center Plan in an amount equal to the projected unit credit accrued liability in the Employees' Plan.
Recodification	Effective 2/25/2002
	Allows a benefit based on disability leave service and pre-plan military service to be credited over the 70% cap. Elimination of Tier Two benefits. Changed early retirement factors. Added a death benefit.
County Council Bill No. 32-04	Effective 7/1/2004
	Allows retirement after 20 years of service for "Category I" participants. Changes vesting for new hires from 5 years to 20 years. Provides for employees' contributions to be made on a pre-tax ("pick up") basis.
County Council Bill No. 74-09	Effective 12/11/2009
	For non-represented members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 3% for determining the final average basic pay. For D3 and S2 members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 4% for determining the final average basic pay.
County Council Bill No. 78-09	Effective 11/16/2009
	For D1 and D2 members, FY2010 annual pay shall be determined by increasing FY2009 annual pay by an assumed 4% for determining the final average basic pay.
County Council Bill No. 6-10	Effective 4/18/2010
	Provides for a disability benefit for those participants who are totally and permanently disabled as a result of qualified military service.
County Council Bill No. 41-10	Effective 7/1/2010
	Increased the contribution rate for Detention Officers, Detention Corporals and Detention Sergeants to 6.75%. Added a "pop-up" option.
County Council Bill No. 98-12	Effective 5/13/2013.

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	Changed the definition of “final average basic pay” from highest 3 out of the last 5 years basic pays to highest 3 of all basic pays.
County Council Bill No. 30-12	Effective 2/1/2013
	A participant in the classification of Detention Officer, Detention Corporal, or Detention Sergeant shall contribute 6.75% of his or her annual basic pay in each calendar year or portion of a calendar year while an active participant in the plan.
County Council Bill No. 97-13	Effective 4/14/2014
	Category II members of the Detention and Deputy Sheriffs' Plan hired on or after July 1, 2015 will be subject to 10-year vesting and 10-year normal retirement provisions. The 10-year requirement also affects the ability to purchase service or get credit for pre-plan military service.
County Council Bill No. 50-15	Effective 7/21/2015
	Category I members of the Detention and Deputy Sheriffs' Plan, as well as correctional facility administrators, assistant correctional facility administrators, and superintendents of detention facilities are eligible to participate in DROP upon completion of 20 years of actual plan service.
County Council Bill No. 56-16	Effective 7/1/2016
	Allows for interest to be credited to a DROP member's account in the sixth year of DROP participation.
County Council Bill No. 78-17	Effective 7/1/2017
	Eliminates the reduction in benefit for DROP retirees if they are reemployed in any capacity that meets the exceptions set forth in 5-1-203(c)(1). Also adds an exception under 5-1-203(c) for any retirees (including DROP participants) who are reemployed into a grant funded contractual position under 802(a)(17) of the Charter.

Solvency Test

2011 to 2020

Actuarial Valuation Date	Active Member Contribution (1) ¹	Retirees and Beneficiaries Inactive and Pay- Status Members (2)	Active Members Employer Financed Portion (3)	Actuarial Value of Assets	Portion of Actuarial Accrued Liabilities Covered by Assets		
					(1)	(2)	(3)
1/1/2011	9,835,267	54,507,031	55,424,905	87,911,133	100%	100%	42.5%
1/1/2012	10,727,312	59,538,436	55,721,536	90,334,022	100%	100%	36.0%
1/1/2013	10,907,008	68,999,860	53,771,217	92,617,788	100%	100%	23.6%
1/1/2014	11,270,515	73,758,850	58,666,981	102,136,092	100%	100%	29.2%
1/1/2015	12,626,207	78,123,913	64,234,148	112,017,103	100%	100%	33.1%
1/1/2016	12,720,040	82,685,631	68,009,223	119,275,911	100%	100%	35.1%
1/1/2017	13,431,665	84,771,888	73,488,955	127,553,081	100%	100%	39.9%
1/1/2018	14,015,668	92,026,542	78,317,776	137,791,833	100%	100%	40.5%
1/1/2019	13,891,558	101,070,151	80,134,623	144,689,347	100%	100%	37.1%
1/1/2020	14,240,571	105,162,356	86,423,100	153,490,883	100%	100%	39.4%

Analysis of Financial Experience

Reasons for Change in the Unfunded Accrued Liability

The unfunded accrued liability increased from \$50,406,985 to \$52,335,144. The funded status increased from 74.2% to 74.6%.

Reasons for Change in Contribution Rates

The employer contribution rate decreased from 36.3% for the fiscal year ending June 30, 2020 to 34.9% for the fiscal year ending June 30, 2021. The decrease of 1.4% is due to the following reasons:

Investment Performance	0.7%
Pay Increases	0.1%
New Entrants/Change in Normal Cost	-0.5%
COLA	-0.2%
Change in Expenses	0.0%
Assumption and Method Changes	0.0%
Demographics and Other Changes	-1.5%
Total	-1.4%

¹ Does not include contribution balances for any participants currently in DROP

Net Pension Liability of the County

The components of the net pension liability of the County at December 31, 2019, were as follows:

Total pension liability	\$ 213,233,864
Plan fiduciary net position	(155,082,765)
County's net pension liability	<u>\$ 58,151,099</u>
Plan fiduciary net position as a percentage of the total pension liability	72.73%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of December 31, 2019 using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	Rates vary by participant age
Investment rate of return	7.45%, net of pension plan investment expense, including inflation
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A five-year set forward is used for post-disability mortality.

The above is a summary of key actuarial assumptions. Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Sensitivity of the net pension liability to changes in the discount rate

	<i>1% Decrease</i> <u>6.45%</u>	<i>Current</i> <i>Discount Rate</i> <u>7.45%</u>	<i>1% Increase</i> <u>8.45%</u>
County's net pension liability	\$ 82,608,048	\$ 58,151,099	\$ 37,832,961

Changes in the Net Pension Liability

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at 12/31/18	\$ 200,706,206	\$ 134,908,267	\$ 65,797,939
Changes for the year:			
Service cost	4,146,785		4,146,785
Interest	14,631,903		14,631,903
Changes of benefit terms	-		-
Differences between expected and actual experience	1,010,457		1,010,457
Changes of assumptions	1,348,161		1,348,161
Contributions - employer		7,600,380	(7,600,380)
Contributions - member		1,401,642	(1,401,642)
Net investment income		19,917,617	(19,917,617)
Benefit payments, including refunds of member contributions	(8,609,648)	(8,609,648)	-
Administrative expense		(135,493)	135,493
Other		-	-
Net Changes	<u>12,527,658</u>	<u>20,174,498</u>	<u>(7,646,840)</u>
Balances at 12/31/19	<u>\$ 213,233,864</u>	<u>\$ 155,082,765</u>	<u>\$ 58,151,099</u>

Anne Arundel County Retirement and Pension System
 Detention Officers' and Deputy Sheriffs' Retirement Plan – Actuarial Information
 December 31, 2019

Changes in the County's Net Pension Liability and Related Ratios

Last 10 Fiscal Years

(Dollar amounts in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Total pension liability										
Service cost	\$ 4,147	\$ 4,533	\$ 4,658	\$ 4,461	\$ 4,634	\$ 4,602				
Interest	14,632	13,836	12,912	12,281	11,401	10,301				
Changes of benefit terms	-	-	-	-	4,635	-				
Differences between expected and actual experience	1,010	1,938	2,244	(1,678)	(2,558)	2,322				
Changes of assumptions	1,348	-	-	-	-	3,494				
Benefit payments, including refunds of member contributions	(8,610)	(8,162)	(6,821)	(6,485)	(6,279)	(5,819)				
Net change in total pension liability	12,528	12,145	12,993	8,579	11,834	14,900				
Total pension liability - beginning	200,706	188,562	175,569	166,990	155,156	140,256				
Total pension liability - ending (a)	<u>\$ 213,234</u>	<u>\$ 200,706</u>	<u>\$ 188,562</u>	<u>\$ 175,569</u>	<u>\$ 166,990</u>	<u>\$ 155,156</u>				
Plan fiduciary net position										
Contributions - employer	\$ 7,600	\$ 7,282	\$ 7,000	\$ 6,689	\$ 6,371	\$ 6,111				
Contributions - member	1,402	1,352	1,354	1,316	1,317	1,298				
Net investment income	19,918	(6,825)	19,607	8,159	(1,919)	4,944				
Benefit payments, including refunds of member contributions	(8,610)	(8,162)	(6,821)	(6,485)	(6,279)	(5,819)				
Administrative expense	(135)	(108)	(109)	(100)	(98)	(96)				
Other	-	-	-	-	-	-				
Net change in plan fiduciary net position	\$ 20,174	\$ (6,461)	\$ 21,030	\$ 9,579	\$ (608)	\$ 6,438				
Plan fiduciary net position - beginning	134,908	141,369	120,339	110,760	111,368	104,930				
Plan fiduciary net position - ending (b)	<u>\$ 155,083</u>	<u>\$ 134,908</u>	<u>\$ 141,369</u>	<u>\$ 120,339</u>	<u>\$ 110,760</u>	<u>\$ 111,368</u>				
County's net pension liability - ending (a)-(b)	<u>\$ 58,151</u>	<u>\$ 65,798</u>	<u>\$ 47,193</u>	<u>\$ 55,230</u>	<u>\$ 56,230</u>	<u>\$ 43,788</u>				
Plan fiduciary net position as a percentage of the total pension liability	72.73%	67.22%	74.97%	68.54%	66.33%	71.78%				
Covered payroll	\$ 22,057	\$ 19,573	\$ 19,790	\$ 19,801	\$ 19,386	\$ 19,776				
County's net pension liability as a percentage of covered payroll	263.64%	336.16%	238.47%	278.92%	290.05%	221.43%				
Expected average remaining service years of all participants	3	3	3	3	4	4				

Notes to Schedule:

Benefit changes: There are no benefit changes reflected in the current schedule.

Changes of assumptions: The following assumptions were changed: interest rate, mortality, retirement rates, turnover rates, and disability rates. Full descriptions of the actuarial assumptions are available in the January 1, 2019 actuarial valuation report.

Covered Payroll: Does not include pay for members in DROP.

Anne Arundel County Retirement and Pension System
 Detention Officers' and Deputy Sheriffs' Retirement Plan – Actuarial Information
 December 31, 2019

Schedule of County Contributions

Last 10 Fiscal Years

(Dollar amounts in thousands)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined contribution	\$ 7,600	\$ 7,282	\$ 7,000	\$ 6,689	\$ 6,371	\$ 6,111				
Contributions in relation to the actuarially determined contribution	7,600	7,282	7,000	6,689	6,371	6,111	Information for FY2013 and earlier is not available			
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>				
Covered payroll (excluding members in DROP)	\$ 22,057	\$ 19,573	\$ 19,790	\$ 19,801	\$ 19,386	\$ 19,776				
Contributions as a percentage of covered payroll	34.46%	37.20%	35.37%	33.78%	32.86%	30.90%				

Notes to Schedule

Valuation date:

Actuarially determined contribution amounts are calculated as of each January 1 for the upcoming County fiscal year beginning July 1. Actuarial valuations are performed every year.

Methods and assumptions used to determine contribution rates:

Actuarial cost method	Projected Unit Credit
Amortization method	Level percent of payroll (closed), increasing 3.0% per year.
Remaining amortization period	Remaining Amortization periods range from 3 to 23 years.
Asset valuation method	5-year smoothed market
Inflation	3.00%
Salary increases	Rates vary by participant age
Investment rate of return	7.45%, net of pension plan investment expense, including inflation
Retirement age	Rates vary by participant age and service
Mortality	RP-2014 Blue Collar Mortality Table for males and females projected generationally using scale MP-2018. A five-year set forward is used for post-disability mortality.

Statistical Section

Anne Arundel County Retirement and Pension System

Statement of Changes in Plan Net Position - Employees' Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
ADDITIONS										
Contributions:										
Employer	\$ 29,637,342	\$ 27,032,514	\$ 25,654,218	\$ 25,809,828	\$ 25,629,927	\$ 24,451,074	\$ 22,361,658	\$ 19,823,814	\$ 18,186,402	\$ 17,284,080
Participant	5,511,825	5,611,993	5,471,911	5,181,705	4,846,856	4,662,147	4,452,981	4,416,529	4,562,145	4,536,815
Total contributions	35,149,167	32,644,507	31,126,129	30,991,533	30,476,783	29,113,221	26,814,639	24,240,343	22,748,547	21,840,895
Total investment income (loss)	91,472,051	(31,257,326)	94,922,075	40,737,517	(8,460,297)	28,221,576	52,230,456	63,100,607	9,825,346	61,439,541
Total Additions	126,621,218	1,387,181	126,048,204	71,729,050	22,016,486	57,334,797	79,045,095	87,340,950	32,573,893	83,280,436
DEDUCTIONS										
Benefit payments and refunds	55,015,580	50,574,448	47,406,822	44,007,025	41,260,300	39,008,750	36,727,715	34,375,282	31,480,607	29,520,937
Administrative expenses	618,605	533,927	519,027	459,455	505,852	502,007	757,210	546,061	481,210	504,442
Total deductions	55,634,185	51,108,375	47,925,849	44,466,480	41,766,152	39,510,757	37,484,925	34,921,343	31,961,817	30,025,379
Net increases (decreases)	70,987,033	(49,721,194)	78,122,355	27,262,570	(19,749,666)	17,824,040	41,560,170	52,419,607	612,076	53,255,057
Net position, January 1	620,172,782	669,893,976	591,771,621	564,509,051	584,258,717	566,434,677	584,258,717	625,818,887	678,238,494	678,850,570
Net position, December 31	\$ 691,159,815	\$ 620,172,782	\$ 669,893,976	\$ 591,771,621	\$ 564,509,051	\$ 584,258,717	\$ 625,818,887	\$ 678,238,494	\$ 678,850,570	\$ 732,105,627

Anne Arundel County Retirement and Pension System

Statement of Changes in Plan Net Position - Police Service Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
ADDITIONS										
Contributions:										
Employer	\$ 23,093,892	\$ 21,933,942	\$ 20,931,078	\$ 20,410,896	\$ 19,559,952	\$ 18,869,736	\$ 17,745,906	\$ 15,530,322	\$ 13,793,256	\$ 14,055,660
Participant	3,669,199	3,371,789	3,250,062	3,158,451	3,104,338	2,949,789	2,679,723	2,553,740	2,637,833	2,297,386
Total contributions	26,763,091	25,305,731	24,181,140	23,569,347	22,664,290	21,819,525	20,425,629	18,084,062	16,431,089	16,353,046
Total investment income (loss)	76,854,873	(25,925,725)	78,166,498	33,000,617	(7,936,443)	22,133,732	41,763,446	50,828,258	6,731,539	49,685,037
Total Additions	103,617,964	(619,994)	102,347,638	56,569,964	14,727,847	43,953,257	62,189,075	68,912,320	23,162,628	66,038,083
DEDUCTIONS										
Benefit payments and refunds	36,852,665	35,929,917	35,023,110	33,356,257	31,131,759	29,507,128	26,936,388	28,241,364	23,479,998	21,449,672
Administrative expenses	540,088	470,041	441,820	389,320	427,109	406,090	615,138	444,328	391,458	410,184
Total deductions	37,392,753	36,399,958	35,464,930	33,745,577	31,558,868	29,913,218	27,551,526	28,685,692	23,871,456	21,859,856
Net increases (decreases)	66,225,211	(37,019,952)	66,882,708	22,824,387	(16,831,021)	14,040,039	34,637,549	40,226,628	(708,828)	44,178,227
Net position, January 1	516,251,360	553,271,312	486,388,604	463,564,217	480,395,238	466,355,199	480,395,238	515,032,787	555,259,415	554,550,587
Net position, December 31	\$ 582,476,571	\$ 516,251,360	\$ 553,271,312	\$ 486,388,604	\$ 463,564,217	\$ 480,395,238	\$ 515,032,787	\$ 555,259,415	\$ 554,550,587	\$ 598,728,814

Anne Arundel County Retirement and Pension System

Statement of Changes in Plan Net Position - Fire Service Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
ADDITIONS										
Contributions:										
Employer	\$ 17,637,120	\$ 15,703,506	\$ 14,664,432	\$ 14,591,340	\$ 15,121,806	\$ 15,898,956	\$ 16,152,402	\$ 15,238,104	\$ 13,959,852	\$ 14,648,580
Participant	3,652,415	3,523,812	3,440,550	3,257,340	3,050,456	2,778,355	2,432,737	2,453,627	2,659,114	2,494,043
Total contributions	21,289,535	19,227,318	18,104,982	17,848,680	18,172,262	18,677,311	18,585,139	17,691,731	16,618,966	17,142,623
Total investment income (loss)	76,173,892	(25,253,407)	78,004,491	33,397,135	(7,794,949)	23,014,967	43,133,618	51,522,774	7,013,578	48,957,240
Total Additions	97,463,427	(6,026,089)	96,109,473	51,245,815	10,377,313	41,692,278	61,718,757	69,214,505	23,632,544	66,099,863
DEDUCTIONS										
Benefit payments and refunds	30,091,059	31,571,336	33,353,794	33,888,976	31,492,994	28,842,723	21,870,063	19,520,674	18,091,220	17,432,953
Administrative expenses	530,549	452,952	439,507	401,289	438,008	409,916	633,476	444,256	388,157	398,463
Total deductions	30,621,608	32,024,288	33,793,301	34,290,265	31,931,002	29,252,639	22,503,539	19,964,930	18,479,377	17,831,416
Net increases (decreases)	66,841,819	(38,050,377)	62,316,172	16,955,550	(21,553,689)	12,439,639	39,215,218	49,249,575	5,153,167	48,268,447
Net position, January 1	509,735,246	547,785,623	485,469,451	468,513,901	490,067,590	477,627,951	490,067,590	529,282,808	578,532,383	583,685,550
Net position, December 31	\$ 576,577,065	\$ 509,735,246	\$ 547,785,623	\$ 485,469,451	\$ 468,513,901	\$ 490,067,590	\$ 529,282,808	\$ 578,532,383	\$ 583,685,550	\$ 631,953,997

Anne Arundel County Retirement and Pension System

Statement of Changes in Plan Net Position - Detention Officers' and Deputy Sheriffs' Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
ADDITIONS										
Contributions:										
Employer	\$ 7,600,380	\$ 7,282,176	\$ 6,999,882	\$ 6,688,662	\$ 6,370,758	\$ 6,110,988	\$ 5,600,178	\$ 5,141,280	\$ 4,876,332	\$ 4,907,130
Participant	1,401,641	1,351,994	1,353,928	1,315,988	1,317,143	1,297,641	1,195,439	1,120,848	1,175,133	1,084,820
Total contributions	9,002,021	8,634,170	8,353,810	8,004,650	7,687,901	7,408,629	6,795,617	6,262,128	6,051,465	5,991,950
Total investment income (loss)	20,166,486	(6,837,179)	19,607,237	8,037,893	(1,931,936)	5,017,294	9,305,671	10,887,141	1,330,029	9,901,091
Total Additions	29,168,507	1,796,991	27,961,047	16,042,543	5,755,965	12,425,923	16,101,288	17,149,269	7,381,494	15,893,041
DEDUCTIONS										
Benefit payments and refunds	8,591,801	8,164,410	6,818,726	6,488,977	6,275,285	5,812,419	5,397,604	5,018,268	4,207,935	3,837,564
Administrative expenses	138,075	115,778	107,893	92,392	99,084	91,235	137,963	93,341	79,614	80,434
Total deductions	8,729,876	8,280,188	6,926,619	6,581,369	6,374,369	5,903,654	5,535,567	5,111,609	4,287,549	3,917,998
Net increases (decreases)	20,438,631	(6,483,197)	21,034,428	9,461,174	(618,404)	6,522,269	10,565,721	12,037,660	3,093,945	11,975,043
Net position, January 1	134,818,772	141,301,969	120,267,541	110,806,366	111,424,770	104,902,501	111,424,770	121,990,491	134,028,151	137,122,096
Net position, December 31	\$ 155,257,403	\$ 134,818,772	\$ 141,301,969	\$ 120,267,540	\$ 110,806,366	\$ 111,424,770	\$ 121,990,491	\$ 134,028,151	\$ 137,122,096	\$ 149,097,139

Anne Arundel County Retirement and Pension System
Schedule of Additions by Source - Employees' Retirement Plan
For the Last Ten Years Ended December 31

Employer Data	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Contributions	\$ 29,637,342	\$ 27,032,514	\$ 25,654,218	\$ 25,809,828	\$ 25,629,927	\$ 24,451,074	\$ 22,361,658	\$ 19,823,814	\$ 18,186,402	\$ 17,284,080
% of Covered Payroll	(21.4)	(20.0)	(18.6)	(19.8)	(20.1)	(19.2)	(19.3)	(17.1)	(15.1)	(14.0)
Participant Data										
Contributions	5,511,825	5,611,993	5,471,911	5,181,705	4,846,856	4,662,147	4,452,981	4,416,529	4,562,145	4,556,815
Total contributions	35,149,167	32,644,507	31,126,129	30,991,533	30,476,783	29,113,221	26,814,639	24,240,343	22,748,547	21,840,895
Total investment income (loss)	91,472,051	(31,257,326)	94,922,075	40,737,517	(18,460,297)	28,221,576	52,230,456	63,100,607	9,825,346	61,439,541
Total Additions	\$ 126,621,218	\$ 1,387,181	\$ 126,048,204	\$ 71,729,050	\$ 22,016,486	\$ 57,334,797	\$ 79,045,095	\$ 87,340,950	\$ 32,573,893	\$ 83,280,436

Anne Arundel County Retirement and Pension System

Schedule of Additions by Source - Police Service Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Employer Data										
Contributions	\$ 23,093,892	\$ 21,933,942	\$ 20,931,078	\$ 20,410,896	\$ 19,559,952	\$ 18,869,736	\$ 17,745,906	\$ 15,530,322	\$ 13,793,256	\$ 14,055,660
% of Covered Payroll	(37.6)	(39.8)	(40.4)	(40.4)	(40.7)	(39.1)	(42.5)	(38.3)	(33.4)	(33.1)
Participant Data										
Contributions	3,669,199	3,371,789	3,250,062	3,158,451	3,104,338	2,949,789	2,679,723	2,553,740	2,637,833	2,297,386
Total contributions	26,763,091	25,305,731	24,181,140	23,569,347	22,664,290	21,819,525	20,425,629	18,084,062	16,431,089	16,353,046
Total investment income (loss)	76,854,873	(25,925,725)	78,166,498	33,000,617	(7,936,443)	22,133,732	41,763,446	50,828,258	6,731,539	49,685,037
Total Additions	\$ 103,617,964	\$ (619,994)	\$ 102,347,638	\$ 56,569,964	\$ 14,727,847	\$ 43,953,257	\$ 62,189,075	\$ 68,912,320	\$ 23,162,628	\$ 66,038,083

Anne Arundel County Retirement and Pension System

Schedule of Additions by Source - Fire Service Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
<u>Employer Data</u>										
Contributions	\$ 17,637,120	\$ 15,703,506	\$ 14,664,432	\$ 14,591,340	\$ 15,121,806	\$ 15,898,956	\$ 16,152,402	\$ 15,238,104	\$ 13,959,852	\$ 14,648,580
% of Covered Payroll	(30.0)	(28.7)	(28.3)	(28.9)	(30.7)	(32.7)	(35.9)	(35.1)	(30.6)	(30.6)
<u>Participant Data</u>										
Contributions	3,652,415	3,523,812	3,440,550	3,257,340	3,050,456	2,778,355	2,432,737	2,453,627	2,659,114	2,494,043
Total contributions	21,289,535	19,227,318	18,104,982	17,848,680	18,172,262	18,677,311	18,585,139	17,691,731	16,618,966	17,142,623
Total investment income (loss)	76,173,892	(25,253,407)	78,004,491	33,397,135	(7,794,949)	23,014,967	43,133,618	51,522,774	7,013,478	48,957,240
Total Additions	\$ 97,463,427	\$ (6,026,089)	\$ 96,109,473	\$ 51,245,815	\$ 10,377,313	\$ 41,692,278	\$ 61,718,757	\$ 69,214,505	\$ 23,632,444	\$ 66,099,863

Anne Arundel County Retirement and Pension System

Schedule of Additions by Source - Detention Officers' and Deputy Sheriffs' Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Employer Data										
Contributions	\$ 7,600,380	\$ 7,282,176	\$ 6,999,882	\$ 6,688,662	\$ 6,370,758	\$ 6,110,988	\$ 5,600,178	\$ 5,141,280	\$ 4,876,332	\$ 4,907,130
% of Covered Payroll	(31.0)	(34.0)	(32.9)	(31.8)	(31.9)	(30.9)	(30.9)	(28.7)	(26.0)	(25.4)
Participant Data										
Contributions	1,401,641	1,351,994	1,353,928	1,315,988	1,317,143	1,297,641	1,195,439	1,120,848	1,175,133	1,084,820
Total contributions	9,002,021	8,634,170	8,353,810	8,004,650	7,687,901	7,408,629	6,795,617	6,262,128	6,051,465	5,991,950
Total investment income (loss)	20,166,486	(6,837,179)	19,607,237	8,037,893	(1,931,936)	5,017,294	9,305,671	10,887,141	1,330,029	9,901,091
Total Additions	\$ 29,168,507	\$ 1,796,991	\$ 27,961,047	\$ 16,042,543	\$ 5,755,965	\$ 12,425,923	\$ 16,101,288	\$ 17,149,269	\$ 7,381,494	\$ 15,893,041

Anne Arundel County Retirement and Pension System

Schedule of Expenses by Type - Employees' Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Retirement Benefits	\$ 54,651,796	\$ 50,218,702	\$ 46,845,091	\$ 43,550,814	\$ 40,941,647	\$ 38,790,383	\$ 36,318,903	\$ 34,031,017	\$ 31,102,824	\$ 29,178,742
Refunds	363,784	355,745	561,731	456,211	318,653	218,367	408,812	344,265	377,783	342,195
Administrative	618,605	533,928	519,027	459,455	505,852	502,007	757,210	546,061	481,210	504,442
Total Expenses	\$ 55,634,185	\$ 51,108,375	\$ 47,925,849	\$ 44,466,480	\$ 41,766,152	\$ 39,510,757	\$ 37,484,925	\$ 34,921,343	\$ 31,961,817	\$ 30,025,379

Anne Arundel County Retirement and Pension System

Schedule of Expenses by Type - Police Service Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Retirement Benefits	\$ 34,093,805	\$ 32,231,240	\$ 30,707,970	\$ 29,719,138	\$ 28,042,800	\$ 26,857,368	\$ 25,801,600	\$ 24,178,421	\$ 22,560,005	\$ 20,973,246
Refunds	30,417	154,429	210,180	354,899	113,762	47,790	4,271	245,111	184,099	10,476
DROP payments	2,728,443	3,544,248	4,104,960	3,282,220	2,975,197	2,601,970	1,130,517	3,817,832	735,894	465,950
Administrative	540,087	470,041	441,820	389,320	427,109	406,090	615,138	444,328	391,458	410,184
Total Expenses	\$ 37,392,752	\$ 36,399,958	\$ 35,464,930	\$ 33,745,577	\$ 31,558,868	\$ 29,913,218	\$ 27,551,526	\$ 28,685,692	\$ 23,871,456	\$ 21,859,856

Anne Arundel County Retirement and Pension System

Schedule of Expenses by Type - Fire Service Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Retirement Benefits	\$ 29,118,078	\$ 29,960,925	\$ 27,621,511	\$ 25,293,551	\$ 23,806,037	\$ 20,143,295	\$ 19,577,152	\$ 17,701,069	\$ 15,876,486	\$ 15,560,775
Refunds	223,669	320,586	440,518	157,533	199,254	20,220	119,655	199,210	457,144	114,588
DROP payments	749,312	1,289,825	5,291,764.5	8,437,892	7,487,703	8,679,208	2,173,256	1,620,395	1,757,590	1,757,590
Administrative	530,549	452,952	439,507	401,289	438,008	409,916	633,476	444,256	388,157	398,463
Total Expenses	\$ 30,621,608	\$ 32,024,288	\$ 33,793,301	\$ 34,290,265	\$ 31,931,002	\$ 29,252,639	\$ 22,503,539	\$ 19,964,930	\$ 18,479,377	\$ 17,831,416

Anne Arundel County Retirement and Pension System

Schedule of Expenses by Type - Detention Officers' and Deputy Sheriffs' Retirement Plan

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Retirement Benefits	\$ 8,190,264	\$ 7,465,177	\$ 6,780,248	\$ 6,430,861	\$ 6,129,460	\$ 5,768,304	\$ 5,364,396	\$ 4,824,001	\$ 4,190,561	\$ 3,790,618
Refunds	112,585	78,777	38,478	58,116	145,825	44,115	33,208	194,267	17,374	46,946
DROP payments	288,952	620,456	-	-	-	-	-	-	-	-
Administrative	138,075	115,778	107,893	92,392	99,084	91,235	137,963	93,341	79,613	80,434
Total Expenses	\$ 8,729,876	\$ 8,280,188	\$ 6,926,619	\$ 6,581,369	\$ 6,374,369	\$ 5,903,654	\$ 5,535,567	\$ 5,111,609	\$ 4,287,548	\$ 3,917,998

Anne Arundel County Retirement and Pension System
Average Benefit Payments - Employees' Plan

Retirement Effective Dates for the last Ten Fiscal Years Ended June 30, and the Six Months Ended December 31, 2018

Retirement Effective Dates	Years of Credited Service									
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30			
Period 7/1/2008 to 6/30/2009	Average monthly benefit Average final average salary Number of retired members	\$0 \$73,930 12	\$1,301 \$33,899 7	\$1,521 \$51,788 14	\$2,697 \$76,461 10	\$2,602 \$62,998 22	\$2,805 \$59,919 17			
Period 7/1/2009 to 6/30/2010	Average monthly benefit Average final average salary Number of retired members	\$858 \$33,675 1	\$1,325 \$60,468 10	\$1,488 \$44,408 9	\$2,285 \$65,207 15	\$2,787 \$64,581 15	\$3,062 \$64,768 27			
Period 7/1/2010 to 6/30/2011	Average monthly benefit Average final average salary Number of retired members	\$866 \$48,000 1	\$1,341 \$73,933 5	\$1,535 \$60,514 8	\$2,086 \$63,166 11	\$2,490 \$66,363 13	\$2,973 \$64,628 20			
Period 7/1/2011 to 6/30/2012	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$1,191 \$57,406 13	\$1,735 \$67,233 10	\$3,008 \$83,960 14	\$3,302 \$81,180 19	\$3,104 \$68,741 23			
Period 7/1/2012 to 6/30/2013	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$1,373 \$61,423 18	\$1,493 \$53,374 9	\$2,113 \$54,783 20	\$3,021 \$67,402 13	\$3,531 \$73,827 24			
Period 7/1/2013 to 6/30/2014	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$969 \$52,434 22	\$1,896 \$64,927 7	\$1,749 \$51,423 13	\$2,664 \$62,863 19	\$3,533 \$77,560 22			
Period 7/1/2014 to 6/30/2015	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$1,396 \$51,336 12	\$2,044 \$76,409 12	\$2,684 \$79,510 8	\$3,247 \$79,151 22	\$3,313 \$73,566 22			
Period 7/1/2015 to 6/30/2016	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$948 \$44,409 9	\$1,707 \$69,116 10	\$2,265 \$63,456 11	\$3,113 \$76,545 28	\$3,790 \$82,715 24			
Period 7/1/2016 to 6/30/2017	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$1,416 \$72,550 20	\$1,799 \$68,233 18	\$2,421 \$70,410 14	\$3,295 \$74,690 17	\$3,525 \$78,814 30			
Period 7/1/2017 to 6/30/2018	Average monthly benefit Average final average salary Number of retired members	\$1,952 \$36,067 1	\$1,425 \$66,465 18	\$1,639 \$69,641 18	\$2,222 \$81,177 14	\$3,649 \$86,795 18	\$3,801 \$81,469 35			
Period 7/1/2018 to 6/30/2019	Average monthly benefit Average final average salary Number of retired members	\$160 \$40,040 1	\$1,049 \$57,181 17	\$1,787 \$74,659 21	\$2,302 \$80,425 15	\$3,395 \$85,077 20	\$4,341 \$94,675 38			
Period 7/1/2019 to 12/31/2019	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$1,550 \$72,443 11	\$1,635 \$60,052 6	\$2,829 \$81,797 5	\$4,185 \$101,147 6	\$3,604 \$79,230 19			

**Anne Arundel County Retirement and Pension System
Average Benefit Payments - Police Service Retirement Plan
Retirement Effective Dates for the last Ten Fiscal Years Ended June 30, and the Six Months Ended December 31, 2018**

Retirement Effective Dates	Years of Credited Service						
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30
Period 7/1/2008 to 6/30/2009	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$2,085 \$60,471 2	\$3,552 \$68,090 3	\$3,341 \$75,440 3	\$3,705 \$80,116 5	\$0 \$0 0
Period 7/1/2009 to 6/30/2010	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$1,885 \$46,628 1	\$3,118 \$71,648 3	\$3,863 \$94,631 1	\$4,374 \$90,867 3	\$5,043 \$94,651 3
Period 7/1/2010 to 6/30/2011	Average monthly benefit Average final average salary Number of retired members	\$2,545 \$47,962 1	\$3,912 \$72,675 3	\$3,821 \$70,711 3	\$3,895 \$72,479 1	\$4,007 \$87,711 5	\$0 \$0 0
Period 7/1/2011 to 6/30/2012	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$2,452 \$77,361 1	\$0 \$0 0	\$3,660 \$79,411 8	\$4,100 \$81,402 8	\$0 \$0 3
Period 7/1/2012 to 6/30/2013	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$0 \$0 0	\$3,291 \$58,658 1	\$3,535 \$74,339 2	\$4,310 \$86,975 8	\$0 \$0 3
Period 7/1/2013 to 6/30/2014	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$3,011 \$55,286 1	\$3,429 \$63,264 2	\$3,355 \$82,074 1	\$3,927 \$82,427 2	\$0 \$0 0
Period 7/1/2014 to 6/30/2015	Average monthly benefit Average final average salary Number of retired members	\$2,653 \$51,685 1	\$2,617 \$51,685 2	\$4,417 \$83,747 1	\$3,622 \$81,979 5	\$3,770 \$91,405 4	\$0 \$0 1
Period 7/1/2015 to 6/30/2016	Average monthly benefit Average final average salary Number of retired members	\$2,680 \$50,932 2	\$3,003 \$58,489 2	\$3,860 \$72,240 1	\$4,417 \$83,747 1	\$4,418 \$95,013 6	\$0 \$0 3
Period 7/1/2016 to 6/30/2017	Average monthly benefit Average final average salary Number of retired members	\$2,817 \$51,685 1	\$3,519 \$66,170 3	\$3,055 \$74,113 3	\$3,962 \$86,796 4	\$5,110 \$107,768 3	\$0 \$0 1
Period 7/1/2017 to 6/30/2018	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$1,611 \$81,323 1	\$2,359 \$73,362 3	\$3,059 \$80,916 3	\$3,980 \$90,301 5	\$0 \$0 2
Period 7/1/2018 to 6/30/2019	Average monthly benefit Average final average salary Number of retired members	\$885 \$56,274 1	\$648 \$63,953 1	\$3,754 \$73,060 2	\$4,278 \$93,414 2	\$4,306 \$100,251 5	\$0 \$0 2
Period 7/1/2019 to 12/31/2019	Average monthly benefit Average final average salary Number of retired members	\$0 \$0 0	\$0 \$0 0	\$5,132 \$98,668 1	\$3,270 \$88,405 2	\$4,178 \$101,787 4	\$0 \$0 0

Anne Arundel County Retirement and Pension System
Average Benefit Payments - Fire Service Retirement Plan
Retirement Effective Dates for the last Ten Fiscal Years Ended June 30, and the Six Months Ended December 31, 2018

Retirement Effective Dates	Years of Credited Service									
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30			
Period 7/1/2008 to 6/30/2009	Average monthly benefit	\$2,394	\$0	\$0	\$4,415	\$3,380	\$0	\$0	\$0	
	Average final average salary	\$47,082	\$0	\$0	\$83,123	\$79,240	\$0	\$0	\$0	
	Number of retired members	1	0	0	1	2	0	0	0	
Period 7/1/2009 to 6/30/2010	Average monthly benefit	\$0	\$2,810	\$0	\$4,291	\$0	\$0	\$0	\$0	
	Average final average salary	\$0	\$52,555	\$0	\$77,747	\$0	\$0	\$0	\$0	
	Number of retired members	0	1	0	2	0	0	0	0	
Period 7/1/2010 to 6/30/2011	Average monthly benefit	\$0	\$2,522	\$0	\$4,087	\$4,153	\$0	\$0	\$0	
	Average final average salary	\$0	\$46,971	\$0	\$81,781	\$83,115	\$0	\$0	\$0	
	Number of retired members	0	1	0	3	2	1	0	0	
Period 7/1/2011 to 6/30/2012	Average monthly benefit	\$3,856	\$1,489	\$3,240	\$0	\$3,410	\$0	\$0	\$0	
	Average final average salary	\$70,096	\$42,806	\$58,567	\$0	\$77,007	\$0	\$0	\$0	
	Number of retired members	1	1	2	0	1	1	0	0	
Period 7/1/2012 to 6/30/2013	Average monthly benefit	\$0	\$2,708	\$2,203	\$3,854	\$3,651	\$0	\$4,492	\$0	
	Average final average salary	\$0	\$48,963	\$67,073	\$82,747	\$79,277	\$0	\$77,005	\$0	
	Number of retired members	0	2	1	3	8	0	1	1	
Period 7/1/2013 to 6/30/2014	Average monthly benefit	\$0	\$2,747	\$0	\$3,351	\$3,278	\$0	\$0	\$0	
	Average final average salary	\$0	\$50,146	\$0	\$71,511	\$77,656	\$0	\$0	\$0	
	Number of retired members	0	2	0	2	1	1	0	0	
Period 7/1/2014 to 6/30/2015	Average monthly benefit	\$0	\$2,490	\$3,257	\$3,753	\$4,764	\$0	\$0	\$0	
	Average final average salary	\$0	\$46,132	\$61,179	\$69,802	\$96,184	\$0	\$0	\$0	
	Number of retired members	0	2	1	1	2	2	0	0	
Period 7/1/2015 to 6/30/2016	Average monthly benefit	\$0	\$0	\$2,607	\$3,753	\$4,166	\$0	\$0	\$0	
	Average final average salary	\$0	\$43,912	\$57,129	\$70,887	\$90,016	\$0	\$0	\$0	
	Number of retired members	0	1	5	2	5	2	0	0	
Period 7/1/2016 to 6/30/2017	Average monthly benefit	\$0	\$0	\$2,805	\$0	\$3,942	\$0	\$0	\$0	
	Average final average salary	\$0	\$0	\$63,911	\$0	\$88,391	\$0	\$0	\$0	
	Number of retired members	0	0	3	0	3	1	0	0	
Period 7/1/2017 to 6/30/2018	Average monthly benefit	\$0	\$0	\$2,097	\$0	\$4,113	\$0	\$6,319	\$0	
	Average final average salary	\$0	\$0	\$60,667	\$0	\$87,260	\$0	\$100,474	\$0	
	Number of retired members	0	0	3	0	2	3	1	1	
Period 7/1/2018 to 6/30/2019	Average monthly benefit	\$0	\$0	\$3,314	\$3,786	\$2,389	\$0	\$11,260	\$0	
	Average final average salary	\$0	\$0	\$64,893	\$69,120	\$77,463	\$0	\$194,906	\$0	
	Number of retired members	0	0	1	1	3	1	1	1	
Period 7/1/2019 to 12/31/2019	Average monthly benefit	\$0	\$0	\$0	\$0	\$4,465	\$0	\$7,303	\$0	
	Average final average salary	\$0	\$0	\$0	\$0	\$101,429	\$0	\$129,228	\$0	
	Number of retired members	0	0	0	0	1	1	1	1	

Anne Arundel County Retirement and Pension System
Average Benefit Payments - Detention Officers' and Deputy Sheriffs' Retirement Plan
Retirement Effective Dates for the last Ten Fiscal Years Ended June 30, and the Six Months Ended December 31, 2018

Retirement Effective Dates	Years of Credited Service									
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30			
Period 7/1/2008 to 6/30/2009	Average monthly benefit	\$0	\$782	\$1,963	\$2,997	\$4,341	\$3,434	\$3,935		
	Average final average salary	\$0	\$48,249	\$67,568	\$71,019	\$94,610	\$73,170	\$70,905		
	Number of retired members	0	3	3	4	2	1	2		
Period 7/1/2009 to 6/30/2010	Average monthly benefit	\$0	\$1,345	\$1,910	\$2,537	\$0	\$0	\$0		
	Average final average salary	\$0	\$48,257	\$56,966	\$64,507	\$0	\$0	\$0		
	Number of retired members	0	5	5	2	0	0	0		
Period 7/1/2010 to 6/30/2011	Average monthly benefit	\$0	\$1,216	\$1,511	\$1,933	\$2,606	\$0	\$4,230		
	Average final average salary	\$0	\$46,342	\$51,707	\$54,454	\$64,099	\$0	\$80,876		
	Number of retired members	0	7	3	1	7	0	1		
Period 7/1/2011 to 6/30/2012	Average monthly benefit	\$0	\$1,294	\$1,922	\$1,800	\$3,098	\$3,917	\$4,623		
	Average final average salary	\$0	\$44,652	\$50,740	\$55,734	\$68,057	\$73,954	\$75,880		
	Number of retired members	0	3	5	7	2	1	2		
Period 7/1/2012 to 6/30/2013	Average monthly benefit	\$0	\$577	\$1,877	\$2,113	\$3,283	\$0	\$4,158		
	Average final average salary	\$0	\$37,324	\$50,974	\$61,015	\$74,501	\$0	\$85,146		
	Number of retired members	0	3	5	2	8	0	1		
Period 7/1/2013 to 6/30/2014	Average monthly benefit	\$0	\$563	\$1,353	\$2,526	\$2,683	\$0	\$0		
	Average final average salary	\$0	\$47,394	\$55,388	\$69,155	\$65,806	\$0	\$0		
	Number of retired members	0	2	4	4	2	0	0		
Period 7/1/2014 to 6/30/2015	Average monthly benefit	\$0	\$736	\$1,657	\$2,012	\$3,888	\$4,448	\$4,185		
	Average final average salary	\$0	\$45,855	\$55,828	\$57,174	\$89,482	\$94,120	\$72,918		
	Number of retired members	0	5	2	7	2	1	1		
Period 7/1/2015 to 6/30/2016	Average monthly benefit	\$0	\$643	\$1,266	\$2,574	\$3,098	\$3,124	\$0		
	Average final average salary	\$0	\$43,049	\$49,626	\$68,661	\$67,546	\$69,804	\$0		
	Number of retired members	0	1	1	4	3	1	0		
Period 7/1/2016 to 6/30/2017	Average monthly benefit	\$0	\$831	\$1,452	\$2,116	\$2,747	\$0	\$0		
	Average final average salary	\$0	\$48,832	\$57,652	\$63,089	\$64,943	\$0	\$0		
	Number of retired members	\$0	4	3	3	3	0	0		
Period 7/1/2017 to 6/30/2018	Average monthly benefit	\$0	\$732	\$1,229	\$2,309	\$2,800	\$3,519	\$5,806		
	Average final average salary	\$0	\$52,091	\$57,759	\$65,116	\$68,500	\$71,631	\$105,609		
	Number of retired members	0	1	2	1	10	2	1		
Period 7/1/2018 to 6/30/2019	Average monthly benefit	\$0	\$1,104	\$1,941	\$0	\$3,300	\$5,401	\$0		
	Average final average salary	\$0	\$51,499	\$55,889	\$0	\$76,152	\$117,929	\$0		
	Number of retired members	0	2	3	0	5	3	0		
Period 7/1/2019 to 12/31/2019	Average monthly benefit	\$812	\$1,855	\$1,478	\$1,983	\$2,186	\$0	\$0		
	Average final average salary	\$49,855	\$55,060	\$55,022	\$69,462	\$76,449	\$0	\$0		
	Number of retired members	1	2	1	2	2	0	0		

Anne Arundel County Retirement and Pension System

Schedule of Members by Years of Service - Employees' Retirement Plan

For the Last Ten Years Ended December 31

<i>Years of Credited Service</i>	<i>2019</i>	<i>2018</i>	<i>2017</i>	<i>2016</i>	<i>2015</i>	<i>2014</i>	<i>2013</i>	<i>2012</i>	<i>2011</i>	<i>2010</i>
0 to 4	751	791	262	721	647	614	468	443	534	673
5 to 9	364	285	298	373	437	512	578	533	501	452
10 to 14	363	415	404	364	354	347	333	432	415	349
15 to 19	269	263	286	287	269	236	229	220	211	191
20 to 24	168	156	156	148	141	163	196	233	278	308
25 to 29	114	140	143	170	200	203	205	170	149	153
30 and over	141	141	127	124	138	132	116	121	121	113
Total members	2,170	2,191	1,676	2,187	2,186	2,207	2,125	2,152	2,209	2,239
Average years of service	11.7	11.8	11.4	12.0	12.4	12.4	12.8	13.1	12.8	12.3
Average age	48.2	48.4	48.5	48.8	48.9	48.6	49.0	48.6	48.2	47.8
Average salary	\$ 61,566	\$ 61,566	\$60,684	\$59,585	\$58,475	\$57,585	\$ 54,499	\$ 53,915	\$ 54,511	\$ 55,158

Anne Arundel County Retirement and Pension System

Schedule of Members by Years of Service - Police Service Retirement Plan

For the Last Ten Years Ended December 31

<i>Years of Credited Service</i>	<i>2019</i>	<i>2018</i>	<i>2017</i>	<i>2016</i>	<i>2015</i>	<i>2014</i>	<i>2013</i>	<i>2012</i>	<i>2011</i>	<i>2010</i>
0 to 4	278	196	190	199	194	183	157	135	149	133
5 to 9	128	120	110	132	123	151	158	138	120	129
10 to 14	130	136	129	112	119	98	92	126	140	133
15 to 19	90	84	109	125	119	138	142	126	114	99
20 to 24	63	81	73	58	58	53	49	49	44	61
25 to 29	18	17	21	18	27	13	7	4	7	7
30 and over	6	4	2	-	1	2	3	2	2	1
Total members	713	638	634	644	641	638	608	580	576	563
Average years of service	9.4	10.8	11.0	10.6	10.9	10.57	10.7	10.7	10.9	11.1
Average age	35.9	37.2	37.3	37.0	37.4	37.18	37.4	37.4	37.4	37.7
Average salary	\$ 78,829	\$ 75,741	\$75,538	\$69,711	\$68,454	\$67,336	\$ 62,122	\$ 62,102	\$ 64,170	\$ 66,276

Anne Arundel County Retirement and Pension System

Schedule of Members by Years of Service - Fire Service Retirement Plan

For the Last Ten Years Ended December 31

<i>Years of Credited Service</i>	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
0 to 4	243	273	311	288	239	142	71	98	133	244
5 to 9	114	64	79	104	194	258	320	240	239	183
10 to 14	230	282	216	206	157	118	63	85	76	95
15 to 19	113	61	80	70	85	76	84	77	105	75
20 to 24	48	58	51	75	52	60	71	60	58	74
25 to 29	29	37	40	39	38	36	29	24	18	16
30 and over	2	5	7	10	8	3	1	2	2	2
Total members	779	780	784	792	773	693	639	586	631	689
Average years of service	10.6	10.4	10.3	10.2	10.2	10.6	10.8	11.2	10.4	9.8
Average age	37.6	37.4	37.3	37.2	37.3	37.5	37.9	38.2	37.3	36.7
Average salary	\$ 65,186	\$ 62,472	\$ 59,891	\$58,368	\$56,711	\$58,407	\$ 54,752	\$ 55,581	\$ 55,924	\$ 56,521

Anne Arundel County Retirement and Pension System

Schedule of Members by Years of Service - Detention Officers' and Deputy Sheriffs' Retirement Plan

For the Last Ten Years Ended December 31

<i>Years of Credited Service</i>	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
0 to 4	131	99	103	112	103	85	76	79	88	89
5 to 9	57	45	50	53	57	85	82	72	68	87
10 to 14	63	65	55	55	64	50	59	71	114	106
15 to 19	43	49	54	85	78	82	88	87	47	49
20 to 24	41	48	53	26	28	33	28	22	23	14
25 to 29	15	12	10	10	9	5	5	4	5	6
30 and over	4	4	2	2	3	5	4	3	2	3
Total members	354	322	327	343	342	345	342	338	347	354
Average years of service	10.3	11.1	11.4	11.0	11.1	11.4	11.3	11.0	10.8	10.4
Average age	43.4	44.3	44.0	43.8	44.1	44.72	45.0	44.3	44.5	44.5
Average salary	\$ 62,521	\$ 60,787	\$ 60,519	\$57,730	\$56,685	\$57,321	\$ 53,020	\$ 52,949	\$ 54,065	\$ 54,549

Anne Arundel County Retirement and Pension System

Summary of Current Active Members and DROP Members by Years of Service and Plan

For the Year Ended December 31, 2019

Active	Years of Credited Service	Employees' Retirement Plan	Police Service Retirement Plan	Fire Service Retirement Plan	Detention Officers' and Deputy Sheriffs' Retirement Plan	Total
	0-4	751	278	243	131	1,403
	5-9	364	128	114	57	663
	10-14	363	130	230	63	786
	15-19	269	90	113	43	515
	20-24	168	63	48	41	320
	25-29	114	18	29	15	176
	30+	141	6	2	4	153
Total Current Active Members		2,170	713	779	354	4,016
Drop	0-4	N/A	-	-	-	-
	5-9	N/A	-	-	-	-
	10-14	N/A	-	-	-	-
	15-19	N/A	-	-	-	-
	20-24	N/A	14	10	8	32
	25-29	N/A	23	16	8	47
Total Current Active DROP Members		N/A	22	38	10	70
			59	64	26	149

Anne Arundel County Retirement and Pension System

Schedule of Current Active DROP Members by Year of Entry

For the Last Five Years Ended December 31

	<i>Police Service Retirement Plan</i>	<i>Fire Service Retirement Plan</i>	<i>Detention & Sherrif Officers Retirement Plan</i>	<i>Total</i>
2015	2	2	3	7
2016	14	8	4	26
2017	7	23	5	35
2018	21	19	8	48
2019	15	12	6	33
	<u>59</u>	<u>64</u>	<u>26</u>	<u>149</u>

Notes:

- 1) The Employee's Retirement Plan does not provide a DROP.
- 2) The Police Service Retirement Plan DROP was initiated in 2002.
- 3) The Fire Service Retirement Plan DROP was initiated in 2001.
- 4) The Detention Officers' and Deputy Sheriffs' Retirement Plan was initiated in 2015.
- 5) Actuarial data is based on preliminary employee information which therefore, does not agree with the final census data reflected above.

Anne Arundel County Retirement and Pension System

Schedule of Retirees and Beneficiaries by Attained Age and Type of Retirement

For the Year Ended December 31, 2019

<i>Age Group</i>	<i>Normal Retirement</i>	<i>Early Retirement</i>	<i>Service Connected Disability</i>	<i>Non-Service Connected Disability</i>	<i>Total</i>
19 & Under	-	-	-	-	-
20 - 24	-	-	-	-	-
25 - 29	-	-	-	-	-
30 - 34	1	-	9	1	11
35 - 39	2	-	8	5	15
40 - 44	6	-	21	2	29
45 - 49	29	-	41	6	76
50 - 54	151	18	65	8	242
55 - 59	276	31	65	11	383
60 - 64	559	51	53	11	674
65 - 69	668	44	52	11	775
70 - 74	626	26	25	7	684
75 - 79	346	4	21	4	375
80 - 84	211	-	1	3	215
85 & Up	161	-	3	1	165
Total Members	3,036	174	364	70	3,644

Anne Arundel County Retirement and Pension System

History of Operating Revenues and Expenses

For the Last Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
REVENUES										
Employer Contributions	\$ 77,968,734	\$ 71,952,138	\$ 68,249,610	\$ 67,500,726	\$ 66,682,443	\$ 65,330,754	\$ 61,860,144	\$ 55,733,320	\$ 50,815,842	\$ 50,895,450
Participant Contributions	14,235,080	13,859,588	13,516,451	12,913,484	12,318,793	11,687,932	10,760,880	10,544,744	11,034,225	10,433,064
Investment Income	264,667,302	(89,273,637)	270,700,301	115,173,162	(26,123,625)	78,387,569	145,893,607	176,338,780	24,900,493	169,916,939
Total Revenues	\$ 356,871,116	\$ (3,461,911)	\$ 352,466,362	\$ 195,587,372	\$ 52,877,611	\$ 155,406,255	\$ 218,514,631	\$ 242,617,044	\$ 86,750,560	\$ 231,245,453
EXPENSES										
Benefits and Refunds	\$ 130,551,105	\$ 126,240,111	\$ 122,602,452	\$ 117,741,235	\$ 110,160,338	\$ 103,171,020	\$ 90,931,770	\$ 87,155,588	\$ 77,259,760	\$ 72,241,126
Administrative Expenses	1,827,317	1,572,698	1,508,247	1,342,456	1,470,053	1,409,248	1,604,203	1,527,986	1,340,439	1,393,523
Total Expenses	\$ 132,378,422	\$ 127,812,809	\$ 124,110,699	\$ 119,083,691	\$ 111,630,391	\$ 104,580,268	\$ 92,535,973	\$ 88,683,574	\$ 78,600,199	\$ 73,634,649
COVERED PAYROLL										
Annual Covered Payroll	\$ 282,987,620	\$ 266,207,173	\$ 263,033,649	\$ 252,285,869	\$ 245,100,390	\$ 243,678,098	\$ 220,607,481	\$ 217,804,921	\$ 226,183,784	\$ 233,098,361
Employer Contributions as a Percent of Covered Payroll	27.55%	27.03%	25.95%	26.76%	27.21%	26.81%	28.04%	25.59%	22.47%	21.83%

Anne Arundel County Retirement and Pension System

History of Plan Investments and Liabilities

For the Ten Years Ended December 31

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Total Net Assets Fair Market Value	\$ 2,005,470,854	\$ 1,780,978,160	\$ 1,912,252,881	\$ 1,684,262,514	\$ 1,604,773,484	\$ 1,668,780,810	\$ 1,623,305,968	\$ 1,498,074,369	\$ 1,342,485,137	\$ 1,337,927,398
Actuarial Accrued Liability (AAL)	\$ 2,563,486,225	\$ 2,456,663,451	\$ 2,330,000,504	\$ 2,227,654,391	\$ 2,158,514,771	\$ 2,117,461,985	\$ 1,997,891,150	\$ 1,893,021,509	\$ 1,791,891,067	\$ 1,713,528,066
Actuarial Value of Assets (AVA)	\$ 1,979,591,848	\$ 1,909,831,161	\$ 1,866,226,913	\$ 1,787,755,545	\$ 1,725,590,057	\$ 1,666,980,234	\$ 1,562,260,162	\$ 1,448,184,848	\$ 1,462,944,903	\$ 1,471,797,558
Unfunded Actuarial Liability (UAL)	\$ 583,894,377	\$ 546,832,290	\$ 463,773,591	\$ 439,898,846	\$ 432,924,714	\$ 450,481,751	\$ 435,630,988	\$ 444,836,661	\$ 328,946,164	\$ 241,730,508
Funded Ratio (AVA/AAL)	77.22%	77.74%	80.10%	80.25%	79.94%	78.73%	78.20%	76.50%	81.64%	85.89%