



## Anne Arundel County Employees' Retirement Plan

Actuarial Valuation as of January 1, 2023  
to Determine the County's Contribution for the  
Fiscal Year Ending June 30, 2024

# Bolton

*Submitted by:*

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# Table of Contents

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	Page
Transmittal Letter .....	1
Section I    Executive Summary .....	2
Section II    Actuarial Certification.....	5
Section III    Determination of Contributions.....	8
Derivation of Liabilities .....	8
Normal Cost .....	9
Projection of Unfunded Liability.....	9
Actuarially Determined Contribution.....	9
Actuarial Gain/Loss .....	10
Schedule of Amortization Bases .....	11
Section IV    Risk Discussion .....	12
Risk Measures.....	12
Additional Review.....	14
Section V    Assets .....	15
Reconciliation of Assets .....	15
Determination of Investment Gain/(Loss) for Assets .....	16
Development of Actuarial Value of Assets .....	17
10-Year: Market Value vs. Actuarial Value of Assets .....	18
10-Year: Market Value vs. Actuarial Value Rates of Return .....	18
Summary of Investment Returns & Historical Cash Flows .....	19
Comparison of Net Income versus Historical Cash Flows .....	19
Benefit Payment Projection.....	20
Section VI    Participant Information.....	21
Participant Summary .....	21
Active Age/Service Distribution Including Compensation .....	22
Participant Reconciliation .....	23
Section VII    Summary of Plan Provisions.....	24
Section VIII    Actuarial Methods and Assumptions.....	30
Appendices.....	35
Summary of Funding Progress .....	35
Glossary.....	36
Summary of Major Legislative Changes .....	38



Benefits, Actuarial, Investment & Compensation Consulting

May 1, 2023

Anne Budowski  
Personnel Director  
Anne Arundel County  
2660 Riva Road  
Annapolis, MD 21401

*Re: Anne Arundel County Employees' Retirement Plan Valuation*

Dear Anne:

The following sets forth the actuarial valuation of the Anne Arundel County Employees' Retirement Plan as of January 1, 2023. The actuarial valuation was performed at the request of Anne Arundel County (the County). Section I of the report provides a summary, Section II sets forth our Actuarial Certification, and Section III contains the development of the County's contribution for the 2024 fiscal year. Section IV provides a discussion of risk metrics in accordance with ASOP 51, while sections V through VIII contain a summary of the census and asset data, a ten-year projection of benefit payments, plan provisions, assumptions and actuarial methods. The appendices of the report provide information on plan funding, a glossary of many of the terms used in this report, and a summary of major legislative changes.

We are available to answer any questions on the material in this report or to provide explanations or further details as appropriate.

Respectfully submitted,

Ann. M. Sturner, FSA, EA, FCA, MAAA

Jordan McClane, FSA, EA, FCA, MAAA



## Section I. Executive Summary

### Background

Bolton Partners, Inc. (Bolton) has prepared the following report that sets forth the actuarial valuation of the Anne Arundel County Employees' Retirement Plan as of January 1, 2023. This report provides the funded status of the plan as of January 1, 2023 as well as the Actuarially Determined Contribution (ADC) for the plan for the fiscal year ending June 30, 2024 (FY2024). Accounting results under Government Accounting Standards Board Statements 67 and 68 are provided in a separate report.

### Actuarially Determined Contributions (ADC)

	FY2022	FY2023	FY2024
Library ADC*		\$ 635,958	\$ 781,742
All except Library ADC*		37,957,978	47,592,442
ADC	\$ 38,536,810	\$ 38,593,936	\$ 48,374,184
Percent of Total Payroll	27.5%	27.1%	31.8%

\*The allocation of the ADC for Library and Non-Library was first provided for FY2023.

The above amounts assume the County's contribution will be made monthly throughout the fiscal year. Details of the determination of the County's contribution for FY2024 are shown in Section III of this report.

### Key Demographic Elements

	1/1/2022	1/1/2023	% Change
Participant Counts			
Active	2,137	2,156	0.9%
In Receipt	2,150	2,201	2.4%
Inactive with Deferred Benefits	304	293	-3.6%
Total	4,591	4,650	1.3%

### Funding Measures

	1/1/2022	1/1/2023	% Change
1. Actuarial Accrued Liability	\$ 1,057,491,073	\$ 1,155,481,400	9.3%
2. Actuarial Value of Assets	\$ 757,974,584	\$ 773,773,336	2.1%
3. Plan Funded Ratio (2. / 1.)	71.7%	67.0%	(6.6%)
4. Market Value of Assets	\$ 796,314,052	\$ 703,872,452	(11.6%)
5. Funded Ratio based on Market Value of Assets (4. / 1.)	75.3%	60.9%	(19.1%)

## Changes in Contribution Rate

The following table shows the sources of changes in the County’s contribution rate.

Description	Contribution Rate
January 1, 2022 Valuation	27.1%
Investment Performance	1.1%
Pay Increases	-0.1%
New Entrants/Change in Normal Cost	0.1%
COLA	0.1%
Change in Expenses	0.0%
Discount Rate Change	0.0%
Other Assumption/Method Changes	3.7%
Demographics and Other Changes	-0.2%
January 1, 2023 Valuation	31.8%

## Experience Analysis

The following factors affected the County’s contribution as a percentage of payroll:

- Plan assets and investment performance** – the net return for the year ended December 31, 2022 after investment expenses was (9.9%) on a market value basis and 4.1% on an actuarial value basis. Investment returns during CY2022 were about \$133.0 million lower than assumed. A portion of this loss is reflected in the actuarial value of assets (AVA) in this valuation, and the remaining portions will be reflected in future valuations. The AVA and the return on the AVA also reflect the continued recognition of outstanding net investment gains from prior valuations. As of January 1, 2023, there is a total of \$69.9 million in net deferred investment losses that will be reflected in future valuations.
- Cost of Living Adjustment** - Retiree COLAs effective July 1, 2022 (generally, 3.00% for pre-2/1/1997 accruals and 2.50% for post-1/31/1997 accruals) were equal to or greater than the assumed annual increases (3.00% for pre-2/1/1997 accruals and 1.80% for post-1/31/1997 accruals).
- Payroll changes** - Pay for returning employees increased approximately 8.3% over the prior year; a larger increase than the 4.2% increase that was expected. Total participant payroll increased by 6.9% over the prior year, resulting in a higher total payroll than anticipated by the 3.0% per year payroll growth assumption.
- Assumption and method changes** – The funding method and actuarial assumptions were updated pursuant to the recommendations in the Experience Study Report dated November 14, 2022. These updates increased the actuarial accrued liability as of January 1, 2023 by approximately \$55.7 million.

## Risk Measures

The primary risk that a plan sponsor incurs from a defined benefit plan is the risk of substantial increases in annual contributions. Many variables can influence future results and the sensitivity of the ADC will vary from plan to plan. As part of the annual valuation, we monitor commonly used measures of the relative riskiness of a pension plan, relative to the plan sponsor and the employee group covered by the plan. A brief review of the risk metrics and a discussion of key

risks are shown in Section IV. Additional detailed or focused assessment of risks is outside the scope of the actuarial valuation but can be conducted as a separate assignment.

### Changes in Methods, Assumptions, and Plan Provisions

There were no changes in plan provisions. However, pursuant to the 2022 Experience Study dated November 14, 2022 and approved by the Board of Trustees, there were several changes to assumptions and methods. These changes are described in detail in Section VIII.

### Sources of Information

The January 1, 2023 participant data and market value of assets were provided by or at the direction of Anne Arundel County. While we have reviewed this data for consistency and completeness, we have not audited this data.

### Impact of COVID-19

As discussed in the experience study, the assumptions used to determine pension plan costs are based on a long-term future outlook. Because the long-term net impact of COVID-19 is not possible to estimate at this time, the mortality tables used in this valuation are those recommended in the most recent experience study. The tables may be revised before the next experience study.



## Section II. Actuarial Certification

This actuarial valuation sets forth our calculation of an estimate of the liabilities of the Anne Arundel County Employees' Retirement Plan (the plan), together with a comparison of these liabilities with the value of the plan assets, as submitted by Anne Arundel County (the County). This liability calculation and comparison 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.

This report was prepared for the internal use of the County and its auditors in connection with our actuarial valuations of the pension plan. The purpose of this report is to provide the recommended employer contribution for the 2024 fiscal year. It is neither intended nor necessarily suitable for other purposes. Bolton is not responsible for the consequences of any other use or the reliance upon this report by any other party.

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. We have not audited the census or asset data provided, however based on our review the data appears to be reasonable and consistent with previously provided information. Unless otherwise noted in our report, we believe the information provided is sufficiently complete and reliable for purposes of the results presented in this report. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information. The County is solely responsible for the validity and completeness of this information.

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 any changes required thereto.

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

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. 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.

Different assumptions or scenarios within the range of possibilities may also be reasonable and results based on those assumptions would be different. As a result of the uncertainty inherent in a forward-looking projection over a very long period of time, no one projection is uniquely "correct" and many alternative projections of the future could also be regarded as reasonable. Two different actuaries could, quite reasonably, arrive at different results based on the same data and different views of the future.

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. That type of analysis would be a separate assignment.



In addition, decisions regarding benefit improvements, benefit changes, the trust's investment policy, and similar issues should not be based on this valuation. These issues are complex and other factors should be considered when making such decisions. Other factors might include the anticipated vitality of the local economy and future growth expectations, as well as other economic and financial factors.

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. It does not affect the cost of the plan. Different funding methods provide for different timing of contributions to the plan. As the experience of the plan evolves, it is normal for the level of contributions 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 are not responsible for the consequences of any decision by the County to make contributions at a future time rather than an earlier time. The County is responsible for funding the cost of the plan.

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 valuation was completed using both proprietary and third-party models (including software and tools). We have tested these models to ensure they are used for their intended purposes, within their known limitations, and without any known material inconsistencies unless otherwise stated.

The calculations in this report 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.

We make every effort to ensure that our calculations are accurately performed. 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.

Bolton does not practice law and, therefore, cannot and does not provide legal advice. Any statutory interpretation on which this report is based reflects Bolton's understanding as an actuarial firm. Bolton recommends that recipients of this report consult with legal counsel when making any decisions regarding compliance with ERISA, the Internal Revenue Code, or any other statute or regulation.

The County should notify Bolton promptly after receipt of this report if the County disagrees with anything contained in the report or is aware of any information that would affect the results of the report that has not been communicated to Bolton or incorporated herein. The report will be deemed final and acceptable to the County unless the County promptly provides such notice to Bolton.





The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. We are not aware of any direct or material indirect financial interest or relationship, including investments or other services, which could create a conflict of interest that would impair the objectivity of our work.

We are available to answer any questions on the material in this report to provide explanations or further details as appropriate.

Ann. M. Sturner, FSA, EA, FCA, MAAA

Jordan McClane, FSA, EA, FCA, MAAA



## Section III. Determination of Contributions

### Derivation of Liabilities

Below is a summary of the actuarial accrued liability of the future benefits expected to be paid from the plan.

Participants	1/1/2022	1/1/2023
1. Participants		
a. Active (excluding DROP)	2,137	2,156
b. Active Enrolled in DROP	N/A	N/A
c. Retirees	1,872	1,916
d. Beneficiaries	178	188
e. Disabled Participants	100	97
f. Inactive with Deferred	304	293
g. Total	<u>4,591</u>	<u>4,650</u>
2. Active Payroll	\$ 142,221,699	\$ 152,078,335

Actuarial Accrued Liability	1/1/2022	1/1/2023
1. Active Participants	\$ 334,251,893	\$ 393,937,892
2. In-Pay Participants		
a. Retirees	631,844,574	662,857,470
b. Beneficiaries	36,453,985	40,611,058
c. Disabled Participants	28,274,758	30,883,857
d. Total In-Pay Participants	<u>\$ 696,573,317</u>	<u>\$ 734,352,385</u>
3. Inactive with Deferred Benefits		
a. Terminated Vested	26,665,863	27,191,123
b. Refunds of Contributions Owed	-	-
c. Total Inactive with Deferred Benefits	<u>\$ 26,665,863</u>	<u>\$ 27,191,123</u>
4. Total Actuarial Accrued Liability (1. + 2.d. + 3.c)	\$ 1,057,491,073	\$ 1,155,481,400
5. Actuarial Value of Assets (AVA)	\$ 757,974,584	\$ 773,773,336
6. Unfunded Liability Based on AVA (4. - 5.)	\$ 299,516,489	\$ 381,708,064
7. Funded Ratio Based on AVA (5. / 4.)	71.7%	67.0%
8. Market Value of Assets (MVA)	\$ 796,314,052	\$ 703,872,452
9. Unfunded Liability Based on MVA (4. - 8.)	\$ 261,177,021	\$ 451,608,948
10. Funded Ratio Based on MVA (8. / 4.)	75.3%	60.9%



## Normal Cost

The normal cost and the projected normal cost are shown below.

Normal Cost	1/1/2022	1/1/2023
1. Total Benefit Normal Cost	\$ 18,526,075	\$ 21,673,791
2. Employee Normal Cost	4,538,751	5,252,919
3. County Benefit Normal Cost (1. - 2.)	\$ 13,987,324	\$ 16,420,872
4. Estimated Expenses	548,000	587,000
5. County Benefit Normal Cost with Expenses	\$ 14,535,324	\$ 17,007,872
6. Projected Normal Cost with Expenses as of July 1 (5. x 1.03 <sup>0.5</sup> )	\$ 14,751,743	\$ 17,261,105

## Projection of Unfunded Liability

The projection of the unfunded actuarial liability from January 1, 2023 to July 1, 2023 is shown below.

Projection of Unfunded Liability	1/1/2023
1. Unfunded Liability as of January 1, 2023	\$ 381,708,064
2. Expected Employer Contributions 01/01/2023-07/01/2023	19,296,968
3. Expected Employee Contributions 01/01/2023-07/01/2023	2,762,774
4. Expected Expenses 01/01/2023-07/01/2023	293,500
5. Total Normal Cost 01/01/2023-07/01/2023	10,836,896
6. Interest at 7.00%	13,135,404
7. Projected Unfunded Liability as of July 1, 2023 (1. - 2. - 3. + 4. + 5. + 6.)	\$ 383,914,122

## Actuarially Determined Contribution

Below is the derivation of the actuarially determined contribution.

Actuarially Determined Contribution	FYE2024
1. Employer Normal Cost	\$ 17,261,105
2. Amortization Amount	\$ 29,503,984
3. Actuarially Determined Contribution (ADC) (1. + 2.)	\$ 46,765,089
4. Interest for Timing of Payment	\$ 1,609,095
5. ADC Adjusted for Timing of Payment (3. + 4.)	\$ 48,374,184
6. Participant Payroll as of January 1, 2023	\$ 152,078,335
7. Employer Contribution as a Percentage of Participant Payroll	31.8%
8. ADC - Library	\$ 781,742
9. ADC - All except Library	47,592,442



## Actuarial Gain/Loss

Development of actuarial (gain)/loss for January 1, 2022 to January 1, 2023 is shown below.

		Liability	Actuarial Value of Assets	UAAL
1.	Beginning of year total	\$ 1,057,491,073	\$ 757,974,584	\$ 299,516,489
2.	Normal cost (net of admin exp)	18,526,075		18,526,075
3.	Administration expense		(562,545)	562,545
4.	Benefit payments	(63,880,988)	(63,880,988)	-
5.	Contributions		49,754,777	(49,754,777)
6.	Interest	73,085,366	52,544,114	20,541,252
7.	Expected end of year total	\$ 1,085,221,526	\$ 795,829,942	\$ 289,391,584
8.	Impact of plan changes	-	-	-
9.	Impact of assumption changes	55,744,422	-	55,744,422
10.	Actual end of year	1,155,481,400	773,773,336	381,708,064
11.	(Gain)/Loss	\$ 14,515,452	\$ 22,056,606	\$ 36,572,058



## Schedule of Amortization Bases

Below is a schedule of the amortization bases as of July 1, 2023.

Description	Date Established	Years Remaining	Outstanding Balance	Amortization Amount
Unfunded Accrued Liability	1/1/2004	11	\$ (204,579)	\$ (22,338)
Actuarial (Gain)/Loss	1/1/2005	12	9,719,161	990,157
Actuarial (Gain)/Loss	1/1/2006	13	7,222,103	691,187
Actuarial (Gain)/Loss	1/1/2007	14	8,268,435	747,718
Assumption Change	1/1/2008	15	14,025,557	1,204,445
Actuarial (Gain)/Loss	1/1/2008	15	(5,842,869)	(501,756)
Actuarial (Gain)/Loss	1/1/2009	16	48,489,659	3,971,465
Actuarial (Gain)/Loss	1/1/2010	17	(2,064,617)	(161,892)
Asset Method Change	1/1/2011	18	30,631,346	2,307,214
Actuarial (Gain)/Loss	1/1/2011	18	(4,277,358)	(322,179)
Actuarial (Gain)/Loss	1/1/2012	19	33,147,245	2,405,457
Assumption Change	1/1/2013	20	13,011,120	912,109
Actuarial (Gain)/Loss	1/1/2013	20	35,985,698	2,522,678
Assumption Change	1/1/2014	11	17,263,722	1,885,068
Actuarial (Gain)/Loss	1/1/2014	11	(15,610,517)	(1,704,551)
Actuarial (Gain)/Loss	1/1/2015	12	6,083,406	619,758
Actuarial (Gain)/Loss	1/1/2016	13	(16,928,789)	(1,620,160)
Actuarial (Gain)/Loss	1/1/2017	14	3,765,308	340,498
Actuarial (Gain)/Loss	1/1/2018	15	11,268,763	967,705
Actuarial (Gain)/Loss	1/1/2019	16	34,366,838	2,814,759
Assumption Changes	1/1/2019	16	14,115,622	1,156,117
Method change	7/1/2019	16	1,241,134	101,653
Actuarial (Gain)/Loss	7/1/2020	17	21,577,860	1,691,972
Actuarial (Gain)/Loss	7/1/2021	18	(8,013,001)	(603,555)
Assumption Change - 7.00%	7/1/2021	18	50,314,432	3,789,784
Actuarial (Gain)/Loss	7/1/2022	19	(13,065,332)	(948,136)
Actuarial (Gain)/Loss	7/1/2023	20	30,882,160	2,164,909
Assumption Change	7/1/2023	20	58,541,615	4,103,898
Totals			\$ 383,914,122	\$ 29,503,984

Bases are amortized as an equal percent of payroll each year with total payroll expected to increase 3.0% annually. The July 1, 2023 amortization payment of \$29,503,984 is sufficient to cover the interest on the plan's unfunded liability. Based on the the total payment shown above, the total amount will be fully amortized in approximately 17.5 years.

## Section IV. Risk Discussion

### Risk Measures

Pension plans are complicated financial instruments designed to provide income security for plan participants as they move through their working lives and into retirement. As such they can be subject to many different forces that can put the plan in better or worse positions over time. The primary risk that a plan sponsor incurs from a defined benefit plan is the risk of substantial increases in annual contributions.

The “maturity” level of a plan can indicate the likely sensitivity the plan will have to different events whether positive or negative. Variations in the investment returns are a common source of these types of events or shocks. Other sources might be experience that differs from that assumed, assumption changes or plan changes.

Actuarial Standard of Practice No. 51 *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions* requires actuaries to provide information so that users of the report can better understand the potential for future results to vary from the results presented in this report and identify risks on the plan’s future financial condition. This standard does not require the assessment to be based on numerical calculations. In some cases, a more in-depth review of plan risk is warranted.

Examples of risk common to most public plans include the following (generally listed from greatest to least risk):

- **Investment Risk:** The potential that investment returns will be different than expected. The Trustees are well aware of this risk. This valuation reflects the smoothing of asset returns, which reduces the risk of wide year-by-year contribution changes due to investment return fluctuations but does not ultimately reduce the risk inherent in a defined benefit plan.
- **Contribution Risk:** Most commonly this is associated with the potential that actual future contributions are not made in accordance with the plan’s actuarially based funding policy. When this occurs, it can create negative long-term problems.
- **Longevity and Other Demographic Risks:** The potential that mortality or other demographic experience will be different than expected.
- **Asset/liability mismatch risk:** The potential that changes in asset values are not matched by changes in the value of liabilities.
- **Cash Flow Risks:** The potential that contributions coming into the plan will not cover benefit payments. While common in well-funded plans, this still requires the use of interest, dividends or principal to cover benefit payments. When assets need to be sold (or more cash held) it can be an issue. Poorly funded plans with DROP lump sum payments can magnify the issue.

One item left off this list is “interest rate risk” (i.e., the potential that interest rates will be different than expected). This risk is common in corporate ERISA plans where funding is based on bond rates. Interest rates on bonds are still an important consideration when setting an expected return assumption and can change over time.



There are several plan maturity measures that can be significant to understanding the risks associated with the plan. The following table shows four commonly used measures of the relative riskiness of a pension plan, relative to the plan sponsor and the employee group covered by the plan and how they have changed over time.

Risk Measure	January 1, 2021	January 1, 2022	January 1, 2023
Inactive Liability as a Percent of Total Liability	67%	68%	64%
Assets to Payroll	5.1	5.6	4.6
Liabilities to Payroll	7.3	7.4	7.6
Benefit Payments to Contributions	1.5	1.5	1.3

The Assets to Payroll ratio, also called the Asset Volatility Ratio (AVR), is equal to the Market Value of Assets (MVA) divided by payroll. A higher AVR implies that the plan is exposed to greater contribution volatility. The current AVR of 4.6 indicates that a:

- 1% asset gain/loss can be related to about 4.6% of the annual payroll.
- The County's contribution changes by about 0.3% of payroll for each 1.0% gain or loss on the market assets (the plan currently amortizes asset gains/losses over a period of 20 years)

The Liabilities to Payroll ratio, also call the Liability Volatility Ratio (LVR), is equal to the Actuarial Accrued Liability (AAL) divided by payroll. A higher LVR implies that the plan is exposed to greater contribution volatility due to changes in liability measurements. The current LVR of 7.6 indicates that a:

- 1% liability gain/loss can be related to about 7.6% of the annual payroll.
- The County's contribution changes by about 0.5% of payroll for each 1.0% gain or loss on the AAL (the plan currently amortizes liability gains/losses over a period of 20 years).

As the plan approaches a 100% funded level, the AVR will converge to the LVR.

The use of payroll in these risk measures is an easily available substitute for the employer's revenue and often reflects the employer's ability to afford the plan. Each of these measures is a measure of plan maturity. The common evolution of a pension plan is to become more mature over time. Mature plans present more risk to plan sponsors because changes to the liability or assets will result in large changes in the unfunded liability as compared to the overall size of the employer as measured by payroll. As a result, the change in the metrics over time can be as important as the nominal size of the metric itself.

## Additional Review

In some instances, more detailed quantitative assessment of risks is warranted either by the above maturity metrics, part of a periodic self-assessment of risks, or due to changes in investment allocations and capital market assumptions. The following are examples of tests that could be performed:

- **Scenario Test**—A process for assessing the impact of one possible event, or several simultaneously or sequentially occurring possible events, on a plan’s financial condition. A scenario test could show, for example, the effect of a layoff or reduction in workforce, or early retirement program.
- **Sensitivity Test**—A process for assessing the impact of a change in an actuarial assumption on an actuarial measurement. A sensitivity analysis could demonstrate, for example, the impact of a decrease in the valuation discount rate or a change in future life expectancies.
- **Stochastic Modeling**—A process for generating numerous potential outcomes by allowing for random variations in one or more inputs over time for the purpose of assessing the distribution of those outcomes. This type of analysis could show, for example, a range of potential future contribution levels and the likelihood of contributions increasing to a certain level.
- **Stress Test**—A process for assessing the impact of adverse changes in one or relatively few factors affecting a plan’s financial condition. A stress test could show, for example, the impact of a single year or period of several years with significant investment losses.





## Section V. Assets

### Reconciliation of Assets

Below is a reconciliation of assets (unaudited) from January 1, 2021 through December 31, 2023.

	1/1/2021 to 12/31/2021		1/1/2022 to 12/31/2022	
1. Beginning of Year Assets	\$	715,549,870	\$	792,501,241
2. Receipts				
a. Employer Contributions	\$	35,785,063	\$	43,707,333
b. Employee Contributions		5,547,842		5,988,833
c. Investment Income & Dividends		14,671,835		11,746,246
d. Realized and Unrealized Gain/(Loss)		76,675,476		(92,106,436)
e. Stock Loan Income		58,402		61,924
f. Other		8,479,473		5,713,945
g. Total Receipts	\$	141,218,091	\$	(24,888,155)
3. Deductions				
a. Benefit Payments	\$	60,714,291	\$	63,880,988
b. Administrative Expenses		561,014		562,545
c. Investment Expenses	\$	2,991,414	\$	3,168,523
d. Total Disbursements	\$	64,266,719	\$	67,612,056
4. Net Increase (2.g. - 3.d.)	\$	76,951,371	\$	(92,500,211)
5. Preliminary Ending Value (1. + 4.)	\$	792,501,241	\$	700,001,030
6. Contribution Receivable	\$	3,812,811	\$	3,871,422
7. End of Year Assets	\$	796,314,052	\$	703,872,452
8. Rate of Return Net of Investment Fees (2I / [A + B - I] Method)		13.7%		-9.9%



## Determination of Investment Gain/(Loss) for Assets

Market Value of Assets	
As of December 31, 2021	\$ 796,314,052

Item (1)	Amount (2)	Weight for Timing (3)	Weighted Amount (2) × (3)
Contributions	\$ 49,754,777	50%	\$ 24,877,389
Benefits Paid	(63,880,988)	50%	(31,940,494)
Expenses	(562,545)	50%	(281,273)
Total			(7,344,378)
Market Value plus Total Weighted Amount			788,969,674
Assumed Rate of Return for the Year			7.00%
Expected Return			\$ 55,227,877

Actual Return	
1. Market Value as of December 31, 2021	\$ 796,314,052
2. Contributions	49,754,777
3. Benefits and Administrative Expenses Paid	(64,443,533)
4. Market Value as of December 31, 2022	703,872,452
5. Actual Return [(4) - (1) - (2) - (3)]	\$ (77,752,844)
6. Calculation Base (1) + 50% × [(2) + (3)]	788,969,674
7. Market Value Return as a Percentage [(5) / (6)]	-9.9%

Investment Gain/(Loss)	
Actual Return minus Expected Return	\$ (132,980,721)



## Development of Actuarial Value of Assets

The actuarial asset value as of January 1, 2023 is determined by spreading the asset gain or loss for each year over a five-year period. The asset gain or loss is the amount by which the actual asset return differs from the expected asset return.

Market Value of Assets	
As of December 31, 2022	\$ 703,872,452

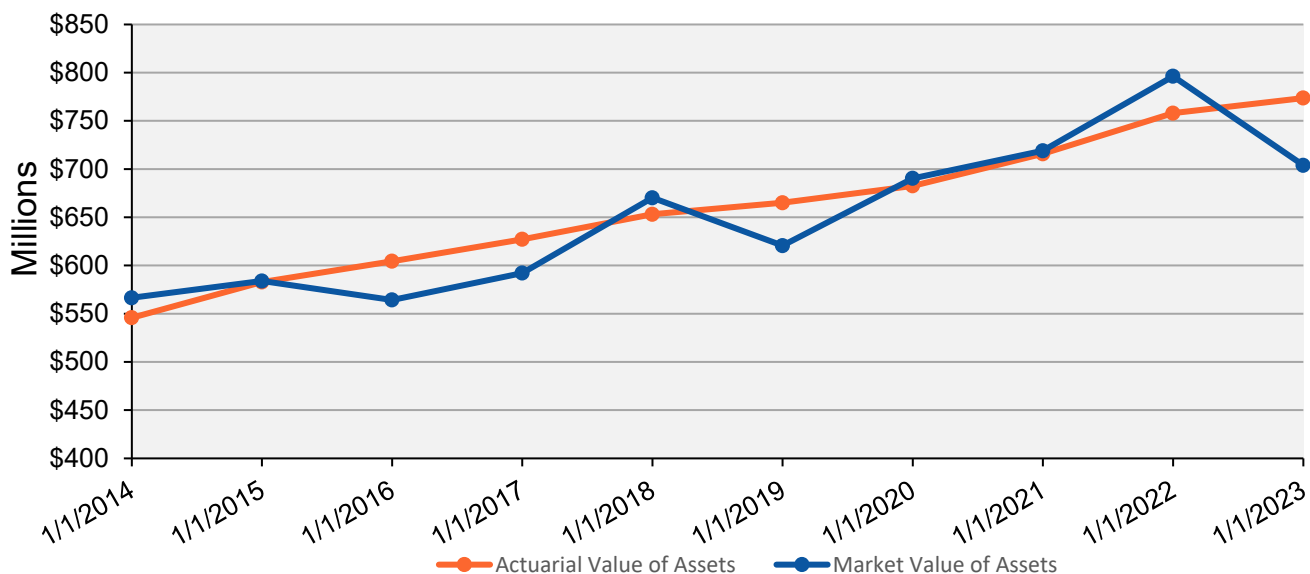
Plan Year End (1)	Investment Gain/(Loss) (2)	Percent Deferred (4)	Deferred Gain/(Loss) (2) × (4)
12/31/2022	(132,980,721)	80%	\$ (106,384,577)
12/31/2021	47,249,417	60%	28,349,650
12/31/2020	(2,099,475)	40%	(839,790)
12/31/2019	44,869,165	20%	8,973,833
<b>Total Deferred</b>			<b>\$ (69,900,884)</b>

Preliminary Actuarial Value of Assets	
As of January 1, 2023 (Market Value of Assets less total Deferred Gain/(Loss))	\$ 773,773,336

Final Actuarial Value of Assets	
Minimum Actuarial Value of Assets (50% of MVA)	\$ 351,936,226
Maximum Actuarial Value of Assets (150% of MVA)	1,055,808,678
As a Percentage of Market Value	109.9%
Actuarial Value of Assets as of January 1, 2023	\$ 773,773,336

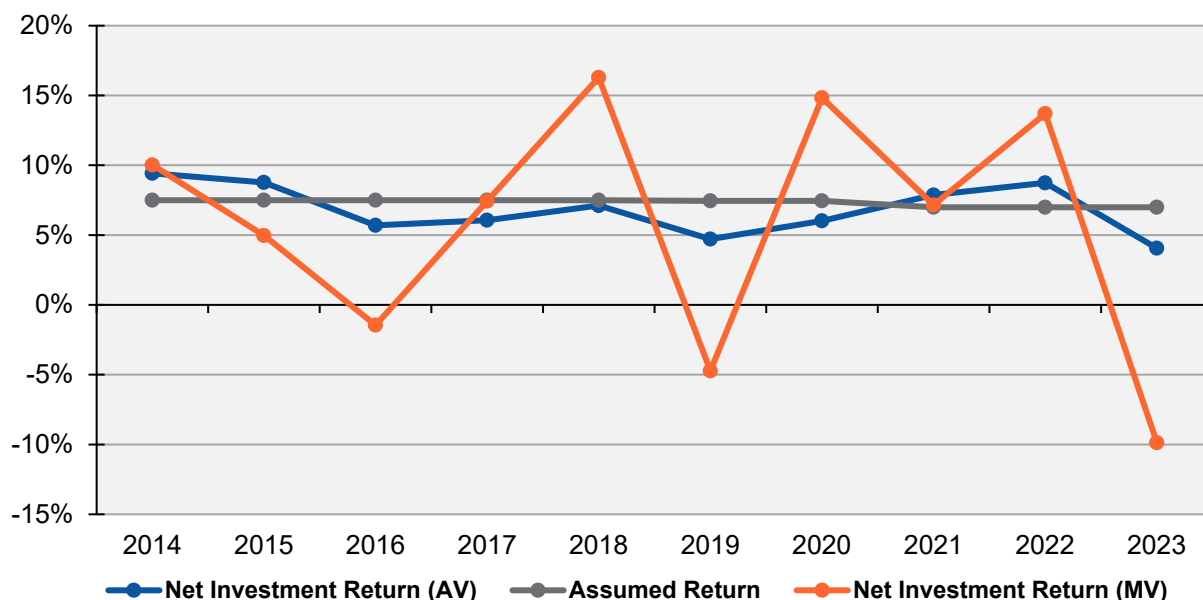
Calculation of Actuarial Return	
1. Actuarial Value as of January 1, 2022	\$ 757,974,584
2. Contributions	49,754,777
3. Benefits and Administrative Expenses Paid	(64,443,533)
4. Actuarial Value as of January 1, 2023	773,773,336
5. Actuarial Return [(4) - (1) - (2) - (3)]	30,487,508
6. Calculation Base (1) + 50% × [(2) + (3)]	750,630,206
7. Actuarial Return as a Percentage [(5) / (6)]	4.1%

### 10-Year: Market Value vs. Actuarial Value of Assets



### 10-Year: Market Value vs. Actuarial Value Rates of Return

The assumed long-term rate of return 7.00% considers past experience, the Trustees' asset allocation policy and future expectations.



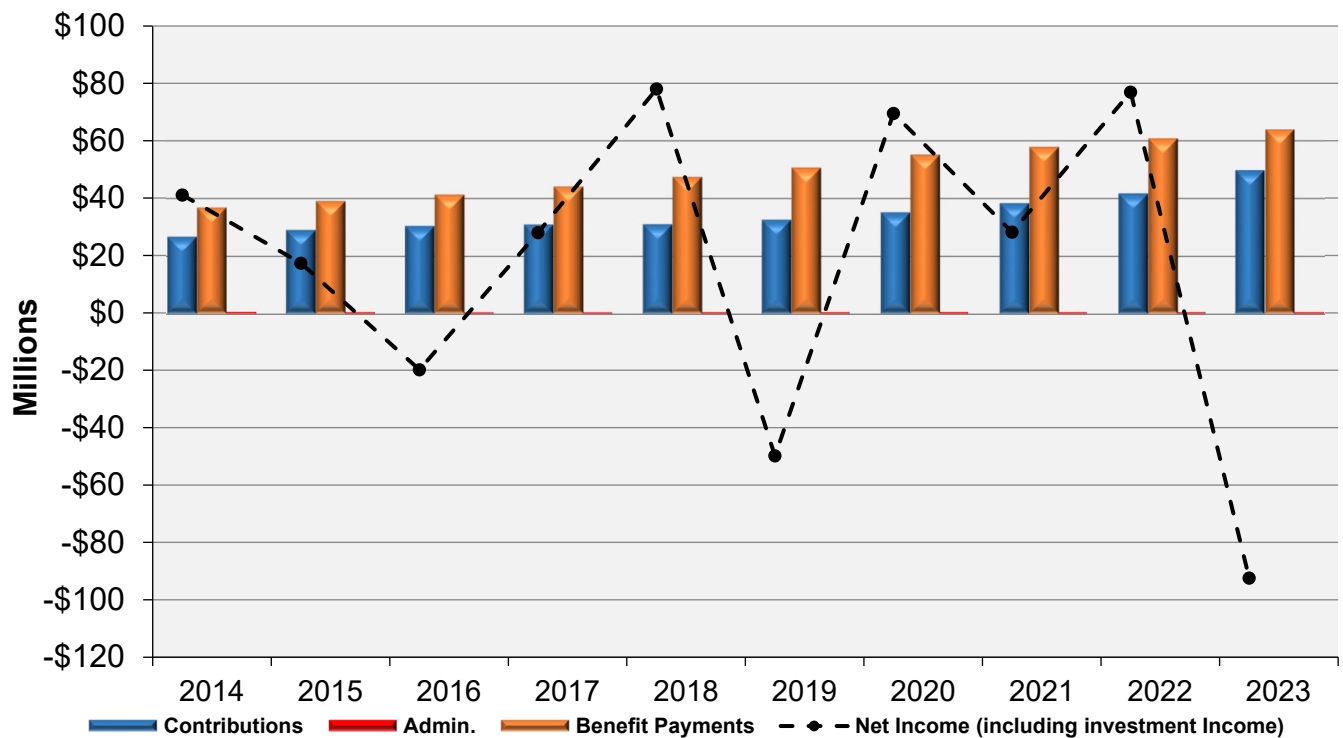
Average Rates of Return	Market Value	Actuarial Value
Most recent year return	(9.9%)	4.1%
Most recent five-year average return	3.7%	6.3%
Most recent ten-year average return	5.5%	6.8%



## Summary of Investment Returns & Historical Cash Flows

Plan Year Ending	Market Value Net Investment Return		Total Contributions	Benefit Payments	Admin. Expenses	Net Income
	Amount	Percent				
2014	\$ 51,715,377	10.0%	\$ 26,814,640	\$ 36,729,818	716,755	\$ 41,083,444
2015	27,720,512	5.0%	29,113,221	39,011,986	518,541	17,303,207
2016	(8,558,399)	(1.5%)	30,476,783	41,252,990	503,838	(19,838,444)
2017	41,528,470	7.4%	30,991,534	44,023,953	496,520	27,999,532
2018	94,817,896	16.3%	31,126,129	47,380,483	525,956	78,037,586
2019	(31,319,334)	(4.7%)	32,644,507	50,575,270	543,087	(49,793,184)
2020	90,055,010	14.8%	35,149,168	55,080,867	609,226	69,514,085
2021	48,156,708	7.2%	38,331,210	57,779,072	535,390	28,173,456
2022	96,520,903	13.7%	41,705,773	60,714,291	561,014	76,951,371
2023	(77,752,844)	(9.9%)	49,754,777	63,880,988	562,545	(92,441,600)
Total	\$ 332,884,299		\$ 346,107,742	\$ 496,429,717	\$ 5,572,872	\$ 176,989,452

## Comparison of Net Income versus Historical Cash Flows





## Benefit Payment Projection

The following table shows the estimated benefit payments from January 1, 2023 through December 31, 2032 based on existing members of the plan.

Calendar Year	Benefits
2023	\$ 68,106,004
2024	71,923,853
2025	74,940,117
2026	78,214,235
2027	81,288,766
2028	84,251,701
2029	87,562,085
2030	90,596,887
2031	93,454,703
2032	96,141,635



## Section VI. Participant Information

### Participant Summary

The following table summarizes the counts, ages and benefit information for plan participants used in this valuation.

		1/1/2022	1/1/2023	% Change
1.	Actives, not in DROP			
a.	Number	2,137	2,156	0.9%
b.	Average Age	48.3	48.4	0.1%
c.	Average Service	11.6	11.3	(2.2%)
d.	Total Compensation	\$ 142,221,699	\$ 152,077,772	6.9%
e.	Average Salary	\$ 66,552	\$ 70,537	6.0%
2.	Service Retirements, Disabled, and Beneficiaries			
a.	Number	2,150	2,201	2.4%
b.	Average Age	70.6	71.0	0.5%
c.	Total Annual Benefit	\$ 61,724,719	\$ 64,021,770	3.7%
d.	Average Annual Benefits	\$ 28,709	\$ 29,088	1.3%
3.	Vested Terminated			
a.	Number	304	293	(3.6%)
b.	Average Age	50.4	50.5	0.3%
c.	Total Annual Benefit	\$ 3,299,342	\$ 3,310,781	0.3%
d.	Average Annual Benefits	\$ 8,587	\$ 11,300	31.6%



## Active Age/Service Distribution Including Compensation

Shown below is the distribution of active participants based on age and service. The compensation shown is the average rate of pay as of January 1, 2023.

Age	Years of Service as of 01/01/2023										Total	
	Under 1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Up		
Under 25	27	36	-	-	-	-	-	-	-	-	-	63
	43,887	45,165	-	-	-	-	-	-	-	-	-	44,617
25 to 29	39	68	25	-	-	-	-	-	-	-	-	132
	51,449	51,067	53,565	-	-	-	-	-	-	-	-	51,653
30 to 34	38	73	70	12	3	-	-	-	-	-	-	196
	52,025	58,782	60,604	70,034	70,099	-	-	-	-	-	-	58,985
35 to 39	26	72	59	33	23	-	-	-	-	-	-	213
	55,674	68,390	66,583	72,922	75,544	-	-	-	-	-	-	67,812
40 to 44	20	59	67	36	45	23	-	-	-	-	-	250
	57,487	61,507	73,813	76,271	76,724	75,934	-	-	-	-	-	70,676
45 to 49	22	46	55	21	48	38	11	1	-	-	-	242
	68,708	67,620	84,316	97,849	82,949	92,752	90,047	90,940	-	-	-	82,239
50 to 54	17	54	50	34	64	51	23	9	3	-	-	305
	58,283	60,564	69,266	76,689	85,169	87,960	85,491	94,612	86,780	-	-	76,547
55 to 59	16	49	73	36	52	54	30	17	6	-	-	333
	47,719	50,881	72,692	69,267	76,877	90,839	90,224	103,092	95,482	-	-	75,051
60 to 64	8	38	46	21	45	40	31	19	8	9	-	265
	31,029	46,607	69,967	81,308	77,983	90,556	91,603	95,602	85,822	92,227	-	76,413
65 to 69	3	8	24	8	14	8	8	4	3	12	-	92
	49,414	21,401	61,156	58,870	77,519	101,344	89,830	110,165	105,550	92,935	-	73,319
70 & up	5	12	16	3	10	4	2	3	3	7	-	65
	21,672	23,256	32,561	51,346	80,105	85,714	95,961	104,248	41,739	100,495	-	54,457
Total	221	515	485	204	304	218	105	53	23	28	-	2,156
	52,201	56,385	68,185	75,887	79,691	89,166	89,655	99,337	85,290	94,597	-	70,537

### Averages

Age 48.4

Service 11.3





## Participant Reconciliation

Shown below is the reconciliation of participants between the prior and current valuation date.

	Active Participants	Inactive Participants		Total
		With Deferred Benefits	Receiving Benefits	
Participants in Last Valuation	2,137	304	2,150	4,591
Retired	(69)	(15)	84	0
Disabled	(2)	(1)	3	0
Vested Termination	(12)	12	0	0
Nonvested Termination/ Lump Sum Paid	(141)	0	0	(141)
Deceased/Payment Expired	(6)	(6)	(63)	(75)
Beneficiary	0	0	21	21
New QDRO	0	0	5	5
Transfer In From:				
Fire Plan	0	0	0	0
Police Plan	0	0	0	0
Detention Plan	3	0	0	3
Transfer Out To:				
Fire Plan	(1)	0	0	(1)
Police Plan	0	0	0	0
Detention Plan	0	0	0	0
Rehired	3	(2)	0	1
New Participants	244	0	0	244
Adjustments	<u>0</u>	<u>1</u>	<u>1</u>	<u>1</u>
Participants in This Valuation	2,156	293	2,201	4,650



## Section VII. Summary of Plan Provisions

### Members in Tier 1

#### Plan Year

January 1 – December 31.

#### Membership

Generally, employees hired before December 4, 1996 and employees hired on or after December 4, 1996 who make an election to be Tier 1 employees.

#### Compensation

Regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses, and commissions.

#### Final Average Basic Pay

The average of the highest 3 years of annual basic pay.

#### Employee Contributions

4% of compensation.

#### Employee Contributions Benefit

The sum of the employee contributions made by the Participant and interest, including contributions made to other plans and transferred to this plan, as allowed by plan provisions.

#### Years of Service

Total number of years and nearest months.

#### Normal Retirement

##### Eligibility

Age 60 and vested, or if earlier, when the participant has reached 30 years of service.

##### Benefit

2% of final average basic pay for each year of service, maximum 60%.

#### Early Retirement

##### Eligibility

Age 50 and the completion of 20 years of service.

##### Benefit

Same as normal retirement, but reduced by the following factors:

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

## Termination Prior to Retirement

### Vesting Date

**Hired before July 1, 2015:** 5 years of service

**Hired on or after July 1, 2015:** 10 years of service

**County Council member whose first term begins on or after December 1, 2014:** 10 years of service

**County Executive and appointed exempt members hired on or after December 1, 2014:** 8 years of service

### Termination prior to Vesting Date

Return of employee contributions with 4.25% interest.

### Termination on or after Vesting Date

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.

## Disability Benefit

Must be totally and permanently disabled (except as the result of activities specified in the County code) regardless of length of service.

### Line of Duty Disability

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

### Non-Line of Duty Disability

Five years of service are required to receive non-duty benefits. The greater of the accrued benefit or 25% of final earnings, payable immediately, unreduced.

## Pre-Retirement Death Benefits

Pre-Retirement Death Benefit (Line of duty)

### *Married*

Greater of:

- An annuity equal to 50% of final average basic pay
- An annuity equal to the accrued benefit

### *Not Married*

Other Pre-Retirement Death Benefit

Pre-Retirement Death Benefit (Non-line of duty)

### *Married and Vested*

Elect one of the following:

- Other Pre-Retirement Death Benefit
- The accrued benefit, reduced actuarially for early commencement and the joint and 100% survivor form. The benefit is payable immediately if the member was eligible for retirement or deferred to early or normal retirement date, as elected, if not eligible to receive an immediate benefit.

### *Not Married or Not Vested*

Other Pre-Retirement Death Benefit



### Other Pre-Retirement Death Benefits

Return of employee contributions with 4.25% interest plus a lump sum of 50% of final average basic pay.

### Normal Form of Benefit

Monthly life annuity with modified cash refund.

### Alternative Forms of Benefit

Alternative forms of payment available to employees at retirement include:

- Joint and 50%, 66 2/3%, 80%, or 100% continued to the survivor upon the death of the participant (joint and survivor pop-up option is also available)
- Social Security step-up option (reflecting assumed Social Security commencement at age 62)

### Actuarial Equivalence

Actuarial Equivalence is determined using 6.00% interest rate, 0% cost-of living adjustment, and the 1983 group annuity mortality table, blended 50% male and 50% female.

### Post-Retirement Cost of Living Increases

Simple for Benefits Accrued as of 1/31/1997

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, or
- Benefit increased by 3% of original benefit.

Compound for Benefits Accrued after 1/31/1997

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

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

### Changes Since Prior Valuation

None.



## Members in Tier 2

### Plan Year

January 1 – December 31.

### Membership

Generally, employees hired on or after December 4, 1996 who have not made an election to be Tier 1 employees.

### Compensation

Regular annual rate of pay, exclusive of extra compensation of any kind such as overtime pay, bonuses, and commissions.

### Final Average Basic Pay

The average of the highest 3 years of annual basic pay.

### Employee Contributions

No employee contributions required or allowed.

### Employee Contributions Benefit

None.

### Years of Service

Total number of years and nearest months .

### Normal Retirement

#### Age

Age 60 and vested, or if earlier, when the participant has reached 30 years of service.

#### Benefit

1.0% of final average basic pay for each year of service.

### Early Retirement

#### Age

Age 50 and the completion of 20 years of service.

#### Benefit

Same as normal retirement but reduced for early commencement (using the same factors as Tier 1).

### Termination Prior to Retirement

#### Vesting Date

**Hired before July 1, 2015:** 5 years of service

**Hired on or after July 1, 2015:** 10 years of service

**County Council member whose first term begins on or after December 1, 2014:** 10 years of service

**County Executive and appointed exempt members hired on or after December 1, 2014:** 8 years of service

#### Termination prior to Vesting Date

No benefit is payable.



#### Termination on or after Vesting Date

The accrued normal retirement benefit taking into account final earnings and service at date of termination, payable at normal retirement date.

#### Disability Benefit

Must be totally and permanently disabled (except as the result of activities specified in the County code) regardless of length of service.

#### Line of Duty Disability

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

#### Non-Line of Duty Disability

Five years of service are required to receive non-duty benefits. The greater of the accrued benefit or 25% of final earnings, payable immediately, unreduced.

#### Pre-Retirement Death Benefits

Pre-Retirement Death Benefit (Line of duty)

##### *Married*

Greater of:

- An annuity equal to 50% of final average basic pay
- An annuity equal to the accrued benefit

##### *Not Married*

Other Pre-Retirement Death Benefit

Pre-Retirement Death Benefit (Non-line of duty)

##### *Married and Vested*

Elect one of the following:

- Other Pre-Retirement Death Benefit
- The accrued benefit, reduced actuarially for early commencement and the joint and 100% survivor form. The benefit is payable immediately if the member was eligible for retirement or deferred to early or normal retirement date, as elected, if not eligible to receive an immediate benefit.

##### *Not Married or Not Vested*

Other Pre-Retirement Death Benefit

#### Other Pre-Retirement Death Benefits

A lump sum of 50% of final average basic pay.

#### Normal Form of Benefit

Monthly life annuity.

#### Alternative Forms of Benefit

Alternative forms of payment available to employees at retirement include:

- Joint and 50%, 66 2/3%, or 100% continued to the survivor upon the death of the participant
- Social Security step-up option (reflecting assumed Social Security commencement at age 62)



### Actuarial Equivalence

Actuarial Equivalence is determined using 6.00% interest rate, 0% cost-of-living adjustment, and the 1983 group annuity mortality table, blended 50% male and 50% female.

### Post-Retirement Cost of Living Increases

Compound for Benefits Accrued after 1/31/1997

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

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

### Changes Since Prior Valuation

None.

## Section VIII. Actuarial Methods and Assumptions

### Funding Method

Entry Age Normal Funding Method. A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit.

### Amortization Policy

The unfunded actuarial accrued liability (UAAL) is amortized as a level percentage of payroll over the following closed periods:

- Gains and losses over 20 years
- Assumption changes over 20 years
- Active plan amendments over the lesser of 15 years and the average expected future service period for participants impacted by the plan amendment
- Inactive plan amendments over the lesser of 10 years and the average life expectancy for participants impacted by the plan amendment
- Early retirement incentives over 5 years or less
- Surplus, when reached, over 30 years (open)

Different amortization periods were utilized prior to 1/1/2014.

Amortization payments increase 3.0% per year.

### Asset Method

Asset smoothing method which spreads the investment gains or losses in excess of the assumed return over a five-year period. The Actuarial Value of Assets can be no less than 50% of market value of assets and no more than 150% of market value of assets.

### Discount Rate and Investment Rate of Return

7.00% compounded annually, net of investment expenses.

### Inflation

3.0%, compounded annually.

### Post-Retirement COLA Increases

Benefits accrued before Bill 88-96 are assumed to increase by 3.0% of the original benefit each year from retirement.

Benefits accrued after Bill 88-96 are assumed to increase by 1.8% of the current benefit each year from retirement.





### Salary Increases

Samples rates are:

Years of Service	Rate
0	7.00%
5	5.75%
10	5.50%
15	5.00%
20	4.25%
25	4.00%
>=30	3.75%

### Payroll Growth

3.0%, compounded annually.

### Mortality

Healthy Actives, Terminated Vested Participants, and Retirees

Pub-2010 General Employee and Healthy Retiree Amount-Weighted Mortality Tables, with 2010 base rates set forward 1 year, and projected generationally from the 2010 base year with improvement scale MP-2021.

Disabled Retirees

Pub-2010 General Disabled Retiree Amount-Weighted Mortality Tables, with 2010 base rates set forward 1 year, and projected generationally from the 2010 base year with improvement scale MP-2021.

Contingent/Beneficiaries

Pub-2010 Contingent Survivor Amount-Weighted Mortality Tables, with 2010 base rates set forward 1 year, and projected generationally from the 2010 base year with improvement scale MP-2021.

100% of pre-retirement deaths are assumed to be non-duty related.

The mortality improvement scale is the scale most recently published by the Society of Actuaries as of the valuation date and may change in future actuarial valuations.

### Retirement

Age	Years of Service			
	5-19	20-29	30	31+
<50	N/A	N/A	40%	35%
50-54	N/A	8%	40%	35%
55-59	N/A	8%	30%	10%
60-64	15%	15%	30%	15%
65-66	25%	25%	30%	15%
67-71	25%	25%	30%	25%
72+	100%	100%	100%	100%

### Termination of Employment

Service	Rate	Service	Rate
0	10.50%	11	5.00%
1	10.00%	12	4.50%
2	9.50%	13	4.00%
3	9.00%	14	3.50%
4	8.50%	15	3.00%
5	8.00%	16	2.50%
6	7.50%	17	2.00%
7	7.00%	18	1.50%
8	6.50%	19	1.00%
9	6.00%	20+	0.00%
10	5.50%		

### Disability

Sample rates are:

Age	Rate
30	0.0178%
35	0.0267%
40	0.0546%
45	0.0903%
50	0.1460%
55	0.2395%
60	0.3576%
64	0.4867%

10% of disablements are assumed to be duty-related.

### Marriage

It is assumed that 70% of employees are married. Husbands are assumed to be 4 years older than wives.

### Special service credit assumptions

#### Disability Leave

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

#### Military Service

Active liabilities (which depend on credited service) are loaded by 1% to account for future crediting of military service.

#### Transferred Service

Transferred service is included in the calculation of a participant's benefit starting at the time the service is originally transferred to the County.



### Administrative Expenses

A load for estimated administrative expenses is included in the Actuarially Determined Contribution. Expenses are assumed to be the average of the administrative expenses for the prior two years increased with the assumed payroll growth, with the resulting average rounded to the nearest \$1,000.

### CIGNA Benefit

The calculations and the data exhibits reflect that some benefits have already been purchased.

### Other Methods and Assumptions

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. Actual military service information for actives is not available.

Members are assumed to stay in their current tier.

It is assumed that Tier 1 vested terminations prior to age 40 will choose to take a lump sum while those 40 and older will choose a deferred benefit.

### Rationale for Assumptions

The following assumptions are deemed to have a significant effect on the calculations and were selected by the County based on the most recent Experience Study dated November 14, 2022.

- Inflation
- Salary increases
- Payroll growth
- Mortality
- Retirement
- Disability
- Termination of employment
- Marriage

The discount rate/investment rate of return is reviewed at least once annually following the same procedures as outlined in the Experience Study.

Anything not specifically noted is deemed to be not significant.

The various actuarial assumptions and methods which have been used are, in our opinion, appropriate for the purposes of this report.



### Changes Since Prior Valuation

Pursuant to the most recent Experience Study dated November 14, 2022, the following methods were changed:

- Funding method: The funding method was changed from Projected Unit Credit to Entry Age Normal.
- Amortization method: Active plan amendments are amortized over the lesser of average future service and 15 years. Previously, they were amortized over the average future service. Inactive plan amendments are now amortized over the lesser of average life expectancy and 10 years. Previously, this was not defined.

Pursuant to the most recent Experience Study dated November 14, 2022, the following assumptions were changed:

- Salary increases
- Base mortality and mortality improvement
- Retirement rates and termination rates



# Appendix 1

## Summary of Funding Progress

	(1)	(2)	(3)	(4)	(5)	(6)
Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Percentage Funded (1) / (2)	Unfunded Actuarial Accrued Liability (2) - (1)	Annual Covered Payroll	Unfunded Actuarial Accrued Liability as a Percentage of Covered Payroll (4) / (5)
1/1/2013	\$508,232,321	\$693,580,675	73.3%	\$185,348,354	\$116,024,717	159.7%
1/1/2014	\$545,812,384	\$735,729,033	74.2%	\$189,916,649	\$115,809,426	164.0%
1/1/2015	\$582,795,438	\$781,105,960	74.6%	\$198,310,522	\$127,090,869	156.0%
1/1/2016	\$604,433,282	\$785,306,609	77.0%	\$180,873,327	\$127,827,040	141.5%
1/1/2017	\$627,147,521	\$812,995,392	77.1%	\$185,847,871	\$130,312,665	142.6%
1/1/2018	\$653,155,048	\$851,463,872	76.7%	\$198,308,824	\$138,239,224	143.5%
1/1/2019	\$665,037,621	\$913,734,834	72.8%	\$248,697,213	\$134,891,500	184.4%
1/1/2020	\$682,574,050	\$953,652,397	71.6%	\$271,078,347	\$138,428,352	195.8%
1/1/2021	\$715,818,072	\$1,028,227,361	69.6%	\$312,409,289	\$139,975,356	223.2%
1/1/2022	\$757,974,584	\$1,057,491,073	71.7%	\$299,516,489	\$142,221,699	210.6%
1/1/2023	\$773,773,336	\$1,155,481,400	67.0%	\$381,708,064	\$152,078,335	251.0%

Analysis of the dollar amounts of net assets available for benefits, actuarial accrued liability, and unfunded actuarial accrued liability in isolation can be misleading. Expressing the net assets available for benefits as a percentage of the actuarial accrued liability provides one indication of funding status on a going-concern basis. Analysis of this percentage over time indicates whether the plan is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. Trends in unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial accrued liability as a percentage of annual covered payroll approximately adjusts for the effects of inflation and aids analysis of Anne Arundel County's progress made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

## Appendix 2 – Glossary

### Actuarial Accrued Liability (AAL)

The difference between the Present Value of Future Benefits and the Present Value of Future Normal Costs or the portion of the present value of future benefits allocated to service before the valuation date in accordance with the actuarial cost method. Represents the present value of benefits expected to be paid from the plan in the future allocated to service prior to the date of the measurement.

### Actuarial Assumptions

Estimates of future plan experience such as investment return, expected lifetimes and the likelihood of receiving a pension from the pension plan. Demographic, or “people” assumptions include rates of mortality, retirement and separation. Economic, or “money” assumptions, include expected investment return, inflation and salary increases.

### Actuarial Cost Method

A procedure for allocating the Present Value of Future Benefits into the Present Value of Future Normal Costs and the Actuarial Accrued Liability. Also known as the “funding method”.

### Actuarial Value of Assets (AVA)

The value of the assets as of a given date, used by the actuary for valuation purposes. The AVA may be the market or fair value of plan assets or a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the actuarially determined contribution (ADC).

### Actuarially Determined Contribution (ADC)

The employer’s periodic determined contribution to a pension plan, calculated in accordance with the assumptions and methods used by the plan actuary.

### Amortization Method

A procedure for payment of the Unfunded Actuarial Accrued Liability (UAAL) by means of periodic contributions of interest and principal. The components of the amortization payment for the UAAL includes the amortization period length, amortization payment increase (level dollar or level percentage of pay), and amortization type (closed or open).

### Experience Gain/Loss

A measure of the difference between actuarial experience and experience anticipated by a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

### Funded Ratio

The actuarial value of assets expressed as a percentage of the plan’s actuarial accrued liability.

### Market Value of Assets (MVA)

The value of the assets as of a given date held in the trust available to pay for benefits of the pension plan.

### Normal Cost

That portion of the Present Value of Future Benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

### Present Value of Future Benefits (PVFB)

The present value of amounts which are expected to be paid at various future times to active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.

### Present Value of Future Normal Cost (PVFNC)

The portion of the Present Value of Future Benefits (PVFB) allocated to future service.

### Unfunded Actuarial Accrued Liabilities (UAAL)

The difference between the Actuarial Accrued Liability (AAL) and the Actuarial Value of Assets (AVA).

## Appendix 3 – Summary of Major Legislative Changes

### County Council Bill No. 36-89

Effective 7/1/1989.

Pension benefits and vesting provisions were improved. The accrual percentage per year of service was increased from 1.8% to 2.0%, permitting accrual of the maximum 60% benefit in 30 years instead of 33-1/3.

Full vesting was granted after 5 years of service. The old provisions used a graded scale granting 75% vesting after 10 years, climbing to 100% vesting after 15 years.

### County Council Bill No. 34-92

Effective 6/1/1992 through 8/31/1992.

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 7/1/1990.

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 90-93

Effective 12/22/1993.

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. 82-94

Effective 10/31/1994.

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 12/4/1996.

The previous method of calculating cost of living increases will only apply to benefits accrued as of 1/31/1997. 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 12/4/1996 will be Tier Two employees and will have different benefits than current employees.





### County Council Bill No. 41-99

Effective 6/15/1999.

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 higher 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. 86-16**  
Effective 1/1/2017.

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 5th year anniversary.

**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. 70-20**  
Effective 11/22/2020.

Each of the pension plans provide pension benefits for an employee who is or becomes totally and permanently disabled and meets certain criteria. To be eligible for a disability pension, the plan requires that the disability prevent the participant from performing the duties of the participant's regular duties. The purpose of the bill is to eliminate the participant's ability to perform any other assignment within their Department as a disqualifying factor for a service connected disability.

**County Council Bill No. 100-21**  
Effective 02/05/2022.

Clarified that the exception to the reduction in pension benefit for rehired classified employees who are reemployed in a contractual position pursuant to § 802(a)(14) of the County Charter is limited to the first 1500 hours per calendar year.