

Frederick County Uniformed Employees Retirement Plan

Actuarial Valuation as of July 1, 2024 to
Determine the County's Contribution for
the Fiscal Year Ending June 30, 2026

Bolton

Submitted by:

James Ritchie, ASA, EA, FCA, MAAA

President of Bolton Retirement

443.573.3924

jritchie@boltonusa.com

Jordan McClane, FSA, EA, FCA, MAAA

Consulting Actuary

667.218.6935

jmcclane@boltonusa.com



Table of Contents

		Page
Transmittal Letter		1
Section I Executive Summary		2
Section II Actuarial Certification.....		5
Section III Determination of Contributions		8
Derivation of Liabilities.....		8
Projection of Unfunded Liability		8
Actuarial Gain/Loss.....		9
Actual Experience.....		9
Normal Cost.....		10
Schedule of Amortization Bases		10
Funding Policy Contribution		11
Section IV Risk Discussion		12
Risk Measures		12
Elements of Pension Plan Financing.....		12
Significant Risks Affecting Pension Plans		13
Quantifying Investment and Funded Status Risk		14
Risk Considerations in Assessing a Funding Policy		15
Historical Plan Risk and Maturity Measures		16
Additional Review		17
Section V Assets		18
Reconciliation of Assets.....		18
Development of Actuarial Value of Assets.....		19
Reconciliation of Actuarial Value of Assets		20
Recognition of Deferred Asset Gains and Losses		20
Section VI Participant Information		21
Participant Summary.....		21
Active Age/Service Distribution Including Compensation.....		22
Participant Reconciliation		23
Inactive Participant Distributions		24
Section VII Summary of Plan Provisions.....		26
Section VIII Actuarial Methods and Assumptions		30
Section IX Glossary		37
Appendices		39
Summary of Funding Progress		39
Benefit Payment Projection		40

Bolton

Employee Benefits, Actuarial & Investment Consulting

January 7, 2025

Emily Fiftal
Director of Human Resources
Frederick County Government
Winchester Hall, Room 200
12 East Church Street
Frederick, MD 21701

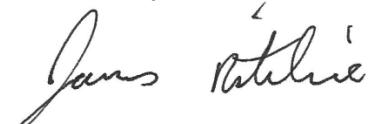
Re: Frederick County Uniformed Employees Retirement Plan

Dear Emily:

The following sets forth the actuarial valuation of the Frederick County Uniformed Employees Retirement Plan as of July 1, 2024. Section I of the report provides the Executive Summary, Section II sets forth the Actuarial Certification, and Section III contains the development of the County's contribution for the 2026 fiscal year. Section IV provides a discussion of risk metrics, while Sections V through VIII contain a summary of the census and asset data, plan provisions, and assumptions and actuarial methods. Section IX provides a glossary of many of the terms used in this report. The appendices of the report provide information on plan funding as well as a 10-year projection of benefit payments.

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

Respectfully submitted,



James Ritchie, ASA, EA, FCA, MAAA



Jordan McClane, FSA, EA, FCA, MAAA

Section I. Executive Summary

Background

Bolton Partners, Inc. has prepared the following report that sets forth the actuarial valuation of the Frederick County Uniformed Employees Retirement Plan (the plan) as of July 1, 2024. This report provides the funded status of the plan as of July 1, 2024 as well as the Actuarially Determined Contribution (ADC) for the plan for the fiscal year ending June 30, 2026 (FY 2026). Accounting results under Governmental Accounting Standards Board Statements 67 and 68 are provided in a separate report.

Funding Policy Contribution

The County's funding policy is to contribute the maximum of:

- 1) The ADC as a percentage of payroll
- 2) Two times the expected employee contributions as a percentage of payroll
- 3) If the funded status, equal to the actuarial value of assets divided by the actuarial accrued liability based on the funding assumptions, is less than 95%, the ADC plus an annual amount that if contributed in addition to the ADC over the next five years is expected to bring the plan to a funded status of 100%

If a significant change has been made to improve members' benefits, then an exception to the funding policy may be made at the direction of the County Executive and County Council.

The cost-of-living (COLA) provision was improved, effective with the July 1, 2022 valuation and was deemed to be a significant change eligible for this exception. The impact of this change is amortized over a 15-year period, beginning July 1, 2022. The 95% funded test in component 3 and any additional contributions required under component 3 of the funding policy are determined based on the actual plan liability, reduced by the outstanding balance of this base. The amortization of this base is then added to the preliminary component 3 result to determine the final funding policy contribution under component 3.

Although the ADC decreased, the funding policy contribution increased from FY 2025 to FY 2026.

Funding Policy Contribution	FY	FY	FY
	2024	2025	2026
(1) ADC	31.5%	31.7%	29.8%
(2) 2 X Employee Contributions	17.5%	17.4%	17.5%
(3) < 95% Funded Contribution	N/A	N/A	33.8%
(4) Funding Policy Contribution			
Max [(1), (2), (3)]	31.5%	31.7%	33.8%

Details of the determination of the County's contributions for FY 2026 are shown in Section III of this report.

Funding Measures

Funding Measures	7/1/2023	7/1/2024	Percent Change
1. Actuarial Accrued Liability			
a. Active	\$ 253,919,089	\$ 282,751,923	11.4%
b. Terminated	4,749,190	5,093,673	7.3%
c. Retired/Disabled	227,103,561	251,786,297	10.9%
d. Total	\$ 485,771,840	\$ 539,631,893	11.1%
2. Actuarial Value of Assets	398,405,160	443,382,660	11.3%
3. Plan Funded Ratio (2. / 1.d.)	82.0%	82.2%	
4. Market Value of Assets	387,547,731	450,483,972	16.2%
5. Funded Ratio based on Market Value of Assets (4. / 1.d.)	79.8%	83.5%	

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 June 30, 2024 after investment expenses was 12.2% on a market-value basis and 7.5% on an actuarial-value basis. Investment returns during FY 2024 were approximately \$20.7 million more than expected. A portion (\$4.1 million) of this gain 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 investment gains and losses from prior valuations. As of July 1, 2024, there is a total of \$7.1 million in net deferred investment gains which will be reflected in future valuations.
- **Payroll changes** – pay for returning employees increased approximately 10.3% over the prior year; more than our expected increase of 6.6% for returning actives. Total participant payroll increased by 9.89% over the prior year; more than the assumption of 2.5% growth per year.
- **Cost-of-Living Adjustment** – the July 1, 2024 COLA was 2.9%, which was more than the 2.3% assumption.

Changes in Method, Assumptions, and Plan Amendments

There were no method changes since the prior valuation.

There were no assumption changes since the prior valuation.

There were no plan changes since the prior valuation.

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.

Projection of Expected Benefit Payments

The projection of expected benefit payments is shown in Appendix 2.

Sources of Information

The July 1, 2024 participant data and market value of assets were provided by or at the direction of Frederick County. While we have reviewed this data for consistency and completeness, we have not audited this data. Unless otherwise noted in our report, we believe the data provided is sufficiently complete and reliable for purposes of the results presented in this report.

Section II. Actuarial Certification

This actuarial valuation sets forth our calculation of an estimate of the liabilities of the Frederick County Uniformed Employees Retirement Plan (the plan), together with a comparison of these liabilities with the value of the plan assets, as submitted by Frederick County Government (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 2026 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.

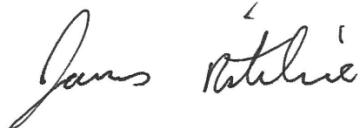
We make every effort to ensure that our calculations are accurately performed. We reserve the right to correct any potential errors by amending the results of this report or by including the corrections in a future valuation report.

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.



James Ritchie, ASA, 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.

Actuarial Accrued Liability	7/1/2023	7/1/2024
1. Active Participants		
a. Retirement Benefits	\$ 235,114,329	\$ 261,860,933
b. Termination Benefits	6,350,209	6,964,851
c. Disability Benefits	10,325,613	11,561,071
d. Death Benefits	2,128,938	2,365,068
e. Total Active Participants	\$ 253,919,089	\$ 282,751,923
2. Terminated Participants	4,749,190	5,093,673
3. In-Pay Participants		
a. Retirees (including DROP)	\$ 206,517,436	\$ 229,804,652
b. Beneficiaries	10,703,492	11,722,838
c. Disabled Participants	9,882,633	10,258,807
d. Total In-Pay Participants	\$ 227,103,561	\$ 251,786,297
4. Total Actuarial Accrued Liability	\$ 485,771,840	\$ 539,631,893
(1.e. + 2. + 3.d.)		

Projected Unfunded Liability

The projection of the unfunded liability from July 1, 2024 to July 1, 2025 is shown below.

Projected Unfunded Liability		
1. Actuarial Liability at July 1, 2024		
a. Active Participants	\$ 282,751,923	
b. Terminated Participants	5,093,673	
c. Retired Participants, Beneficiaries, and Disabled Participants	251,786,297	
d. Total	\$ 539,631,893	
2. Actuarial Value of Assets at July 1, 2024	\$ 443,382,660	
3. Unfunded Liability at July 1, 2024	\$ 96,249,233	
4. Expected FY 2025		
a. Benefit Normal Cost	\$ 20,814,575	
b. County Contributions	\$ 25,249,227	
c. Participant Contributions	\$ 6,958,352	
d. Expenses	\$ 220,000	
5. Projected Unfunded Liability at July 1, 2025	\$ 92,170,066	
6. Impact of Plan Change	\$ 0	
7. Impact of Assumption Changes as of July 1, 2025	\$ 0	
8. Expected Unfunded Liability at July 1, 2025	\$ 80,398,274	
9. Actuarial (Gain)/Loss at July 1, 2025 [(5. – 6 – 7.) - 8.]	\$ 11,771,792	

Actuarial Gain/Loss

Below is the derivation of this year's actuarial (gain)/loss as of July 1, 2024.

Derivation of Actuarial Gain/(Loss)		
1. Unfunded Actuarial Liability as of July 1, 2023	\$	87,366,680
2. Normal Cost as of July 1, 2023		19,449,304
3. Interest on 1. and 2. to June 30, 2024		7,477,119
4. Contributions, adjusted with interest to June 30, 2024		30,671,099
5. Administrative expenses, adjusted with interest to June 30, 2024		206,825
6. Expected Unfunded Actuarial Liability (1. + 2. + 3. - 4. + 5.)	\$	83,828,829
7. Actual Unfunded Actuarial Liability		96,249,233
8. Impact of Plan Changes		0
9. Impact of Assumption Changes		0
10. Actuarial (Gain)/Loss ¹ for 2023-2024 [(7. - 8. - 9.) - 6.]	\$	12,420,404

Actual Experience

There was an actuarial loss of \$12,420,404 for the 2024 fiscal year. The loss is measured by comparing the expected funded position to the actual funded position before any changes are made to the valuation, such as plan and assumption changes reflected in the current valuation. The individual sources of gains and losses that follow are based upon a comparison of actual and expected experience in the year ending on the valuation date.

Source	(Gain) or Loss
Investments (AVA basis)	\$ (2,013,270)
Salaries	8,252,287
Mortality	420,747
Turnover	(281,931)
Disability	(352,995)
COLA	1,261,560
New Entrants	1,279,474
Retirement	349,415
Miscellaneous	3,505,117
Total	\$ 12,420,404

¹ The actuarial (gain)/loss of \$11,771,792 presented on the previous page is equal to the sum of:

(1) This amount of \$12,420,404 as of July 1, 2024 rolled forward to July 1, 2025, and
 (2) The actual FY 2024 and expected FY 2025 "contribution" (gain)/loss due to the sum of the actual FY 2024 and expected FY 2025 contributions to the plan (exceeding)/falling short of the amount necessary to align with expected experience under the amortization schedule.



Normal Cost

Normal Cost	7/1/2023	7/1/2024
1. Retirement Benefits	\$ 17,210,423	\$ 18,373,495
2. Termination Benefits	939,596	1,013,865
3. Disability Benefits	1,068,144	1,173,042
4. Death Benefits	231,141	254,173
5. Total Benefit Normal Cost	\$ 19,449,304	\$ 20,814,575
6. Estimated Expenses	230,000	220,000
7. Total Normal Cost for Plan Year	\$ 19,679,304	\$ 21,034,575
8. Projected Normal Cost for Following Plan Year	\$ 20,857,229	\$ 22,294,533

Schedule of Amortization Bases

Below is a schedule of the amortization bases as of July 1, 2025.

Description	Date Established	Remaining Years	Amount to be Amortized	Payment / (Credit)
Assumption Change	7/1/2020	10	\$ 3,683,560	\$ 458,804
Plan Change (DROP)	7/1/2021	11	\$ 10,422,154	\$ 1,203,802
Plan Change (CPI COLA)	7/1/2023	13	\$ 67,091,800	\$ 6,819,929
Plan Change (IAFF DROP)	7/1/2024	14	\$ 419,480	\$ 40,371
Actuarial (Gain)/Loss	7/1/2025	15	\$ 10,553,072	\$ 633,712
Totals			\$ 92,170,066	\$ 9,156,618

Funding Policy Contribution

The County's funding policy is to contribute the maximum of:

- 1) The Actuarially Determined Contribution (ADC) as a percentage of payroll
- 2) Two times the expected employee contributions as a percentage of payroll
- 3) If the funded status, equal to the actuarial value of assets divided by the actuarial accrued liability, is less than 95%, the ADC plus an annual amount that if contributed in addition to the ADC over the next five years is expected to bring the plan to a funded status of 100%. Please see page 2 or Section VI for more details.

The dollar amounts shown below are based on the estimated FY 2026 payroll. The actual FY 2026 County contribution will be based on the percentages shown and actual FY 2026 payroll.

Funding Policy Contribution		
1. Estimated FY 2026 Payroll (Including Members in DROP)	\$	81,641,823
2. Normal Cost (with Estimated Expenses)		22,294,533
3. Amortization Amount	\$	9,156,618
4. Total (2. + 3.)		31,451,151
5. Expected Participant Contributions	\$	7,132,311
6. Actuarially Determined Contribution (ADC)		
a. Dollars (4. - 5.)		24,318,840
b. Percentage of Payroll (6.a. / 1.)		29.8%
7. Minimum Contribution		
a. Expected Participant Contributions Times Two (5. x 2)	\$	14,264,622
b. Minimum Contribution as a Percentage of Payroll (7.a. / 1.)		17.5%
8. Alternative Minimum Contribution If Less Than 95% Funded*		
a. Net Normal Cost (2. - 5.)	\$	15,162,222
b. Estimated Projected Unfunded Liability Net of CPI-Based COLA Impact**		25,078,266
c. Five-Year Amortization of 8.b. + CPI-based COLA Amortization		12,463,289
d. Alternative Minimum Contribution (8.a. + 8.c.)	\$	27,625,511
e. Alternative Minimum Contribution as a Percent of Payroll (8.d. / 1.)		33.8%
9. Frederick County Funding Policy Contribution		
a. Dollars (Greatest of 6.a., 7.a., and 8.d.)	\$	27,625,511
b. Percentage of Payroll (9.a. / 1.)		33.8%

The funded ratio and the estimated projected unfunded liability for this Alternative Minimum Contribution is determined using the plan liability reduced by the outstanding balance of the plan change unfunded liability base associated with the implementation of the CPI-based COLA.

* July 1, 2024 Funded Ratio Used for Alternative Minimum Contribution		
1. Actuarial Accrued Liability	\$	539,631,893
2. Remaining CPI-Based COLA Amortization Base as of July 1, 2024		69,134,884
3. Estimated Actuarial Accrued Liability Net of CPI-Based COLA Impact (1. - 2.)		470,497,009
4. Actuarial Value of Assets		443,382,660
5. Funded Ratio (4. / 3.)		94.2%

** Projected Unfunded Liability at July 1, 2025		
1. Projected Unfunded Liability at July 1, 2025	\$	92,170,066
2. Remaining CPI-Based COLA Amortization Base as of July 1, 2025		67,091,800
3. Estimated Projected Unfunded Liability Net of CPI-Based COLA Impact (1. - 2.)		25,078,266

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.

The purpose of this section is to provide the reader with a basic understanding of the fundamentals of pension financing and the associated risks, including implications of the Plan’s funding policy on future plan funding, how future experience may differ from the assumptions used, and the potential volatility of future measurements resulting from these differences.

Elements of Pension Plan Financing

The following equation lays out the fundamental elements of pension plan financing:

$$\text{Contributions} + \text{Investment Returns} = \text{Benefit Payments} + \text{Expenses}$$

Employers and employees **contribute** to a plan based on the statutory requirements, plan terms, and plan sponsor funding policy. The plan invests these contributions and earns a **return** on that investment. Together, these contributions and investment returns are the sole sources of income to the plan. **Benefits** are paid to participants who have met the eligibility and vesting requirements defined by the plan. Plans also pay administrative, investment, auditing, legal, and other **expenses** for maintaining the plan. **Over time, contributions and investment earnings must equal benefits and expenses.**

From this equation, it is evident that funding, investment, and benefit policies must be developed together. Once the benefit terms are established, each plan sponsor must determine the desired balance of contributions versus investment returns needed to finance benefits accrued to participants. It is important to remember that the plan sponsor’s investment and funding policies, along with the selected actuarial assumptions, determine the assumed balance between contributions and investment returns. **The actual cost of a plan is based on the actual experience of the plan and may result in a different balance than is assumed.** Ultimately, the expected return does not impact the long-term relationship between the contributions required and the benefit level that can be supported by such contributions. Using a higher expected return assumption may give a false sense of benefit security if the plan does not realize that level of actual returns over time.

The development of integrated benefit, funding, and investment policies generally requires consideration of many factors such as:

- Balancing benefit security and intergenerational equity;
- Risk appetite and ability to absorb short-term volatility in plan contributions;
- Current plan funded status;
- Timing and expected duration of benefit payments; and
- Nature and frequency of past and anticipated future plan amendments.

Significant Risks Affecting Pension Plans

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.
- Contribution risk: the potential that actual future contributions are not made in accordance with the plan's actuarially based funding policy.
- 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 the value of liabilities are not matched by changes in asset values.
- Cash flow risks: The potential that contributions to the plan will not cover benefit payments and expenses.

Investment risk is often the single most significant risk for defined benefit plans. Plans that seek a higher investment return are typically forced to accept a higher level of volatility that can change the plan's funded status drastically year-to-year. Use of an asset smoothing method that phases in investment gains and losses over a period of years can give the perception of less volatility in the funded status from year to year.

Contribution risk most commonly results from either large contribution increases that are difficult for the plan sponsor to meet, or from a material decrease in the number of covered employees and/or covered payroll.

Assumptions regarding mortality and other demographic factors related to participant behavior bring the risk that future experience will diverge from the reasonable assumptions utilized within the actuarial valuation model. For example, participants living longer than expected will increase plan costs, while people terminating sooner than expected will generally decrease plan costs. Additionally, what is considered a reasonable assumption may change over time and lead to an increase or decrease in future contributions.

Actual life expectancies may be longer or shorter than what is reflected in the valuation and benefit payment projections, and will increase or decrease the cost of the plan as actual experience emerges.

Asset/liability mismatch risk is also another major risk for many pension plans. To the extent that the duration of plan assets is not matched to the duration of plan liabilities the change in discount rates could have a significant impact on the plan's funded status. For most public pension plans, changes in asset values and interest rates do not directly affect the measurement of the plan's liability. Liability-driven investment approaches (where the liability is immunized by investments in fixed income whose cash inflows are matched to the benefit payment outflows, or the asset and liability durations are brought into close alignment) will reduce this risk, however it is difficult to invest in a manner that hedges all risks.

As plans mature, they become more reliant on investment returns to pay benefits and expenses. When plans have negative cash flows, they must spend interest and dividends, or may be forced to sell assets at inopportune times, to meet those obligations. Plans with DROP or other lump sum payment features are particularly exposed to this risk.

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, along with long-term capital market expectations. Together these may lead to a change in the interest rate used to value plan liabilities which will increase or decrease the measurement of plan liabilities and the actuarially determined contribution.

Quantifying Investment and Funded Status Risk

Although cash and money market funds have the lowest absolute investment risk, they are typically not the lowest risk investment for a pension plan. With respect to interest rate risk, a pension plan liability behaves like the price of a bond because both equal the discounted value of a series of future cash flows. The present value will change in the opposite direction to a change in interest rates. Therefore, a bond portfolio with the timing of expected income cash flows matched to the expected benefit payment outflows is typically the lowest risk investment approach for a pension plan.

Corporate, Treasury, and municipal bonds, often considered lower risk investment classes, can still have a high level of interest rate risk in their present values. If the duration (timing and pattern of income payments) of the fixed income assets are misaligned with the duration of the plan's liability, there can be significant funded status volatility as interest rates change. The way to mitigate this volatility is minimizing the asset/liability (or duration) mismatch risk.

One means of quantifying the expected cost of assuming future investment and asset/liability mismatch risk is to compare the Plan's current assets to a liability calculated assuming very low default risk. One such measure is called a **Low Default-Risk Obligation Measure** (LDROM). An example of an LDROM is the Plan's Funding Liability determined using a discount rate based on the yields on high quality municipal bonds, similar to what is referenced under GASB statement 68.

	Liability Measure	Assumed Return
Actuarial Liability – Funding Policy Return	\$ 539,631,893	7.00%
Actuarial Liability – Municipal Bond Yield (LDROM)	\$ 951,370,109	3.97%

The difference between the LDROM and the Actuarial Liability used to determine funding contributions can be viewed in several ways, and certain views of this measure may be more relevant for some plan sponsors:

- The expected long-term contribution savings to be achieved by investing in asset classes with higher expected risk and returns than bonds.
- The cost of investing in an all-bond portfolio and significantly lowering expected long-term investment returns in exchange for protecting the Plan's current funded status.
- A measure of the Plan's non-diversifiable investment risk.

Investors expect to be compensated for assuming risk when they make an investment. The risk premium of an investment is the return an asset is expected to generate in excess of the risk-free rate of return. The more risk assumed by the investor, the greater the return they expect to achieve in exchange for accepting that risk.

For plans whose assumed long-term rate of return on plan assets is greater than the municipal bond yield used for the LDROM calculation, the expected cost to the plan sponsor of funding the plan will be lower because of the greater level of investment risk accepted. This in turn leads to greater volatility in the plan's funded status because the actual return on plan investments is expected to vary considerably year-to-year. Conversely, if a plan has taken steps to reduce asset/liability mismatch risk, then the expected cost of contributions to fund the plan will be greater (if the plan is not already fully funded) and the volatility in the plan's funded status will be reduced.

Selecting the right level of investment risk (and associated asset/liability mismatch risk) for a plan requires complex analysis that goes beyond the scope of these basic disclosures. Included in any such analysis must be an evaluation of the plan sponsor's funding policy.

Risk Considerations in Assessing a Funding Policy

When assessing a plan's funding policy, two primary considerations are:

- whether the contributions are determined using reasonable and appropriate actuarial cost, amortization, and asset valuation methods (i.e., is the contribution an Actuarially Determined Contribution (ADC)), and
- the projected period until any Unfunded Actuarial Accrued Liability (UAAL) is fully amortized.

Under the current funding policy, the annual contribution is an ADC. The Plan's UAAL is required to be amortized over various periods depending on the source of the UAAL. New layered amortization bases are established annually.

Assuming all actuarial assumptions are met and contributions are made according to the funding policy, the plan's unfunded liability is expected to decrease in future years. The effect of declining interest rates, investment losses, or other actuarial losses may offset the favorable effect of these contributions and cause the unfunded liability to remain steady or increase in future years.

The second consideration for plan sponsors is the projected period until full funding. Based on the Plan's amortization policy, if contributions are made as expected based on the current valuation and plan funding policy, and all actuarial assumptions are met, the plan is expected to pay off the UAAL in approximately 15 years. Depending on future actuarial and investment experience, the plan may be projected to reach \$0 in unfunded accrued liability in greater than or fewer than 15 years.

Some examples of changes from year to year that will shorten or lengthen the period until the UAAL is fully amortized include:

Factors that Shorten the Amortization Period	Factors that Lengthen the Amortization Period
Contributing more than the ADC	Contributing less than the ADC
Investment and demographic gains	Investment and demographic losses
Increasing interest rates	Decreasing interest rates
Shorter life expectancies	Longer life expectancies
Reducing or eliminating future benefit accruals	Increasing benefit accruals (past and/or future)

Historical Plan Risk and Maturity Measures

While historical plan experience is no guaranteed predictor of the future, it can be informative in assessing the degree of risk and variability in the annual valuation results year-to-year, and in understanding how certain factors influence future outcomes.

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	7/1/2022	7/1/2023	7/1/2024
Inactive Liability as a Percent of Total Liability	47%	48%	48%
Assets to Payroll	5.2	5.3	5.7
Liabilities to Payroll	6.7	6.7	6.8
Benefit Payments to Contributions	0.6	0.7	0.5

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 5.7 indicates that a:

- 1% asset gain/loss can be related to about 5.7% of the annual payroll.
- The funding policy contribution changes by about 0.5% of payroll for each 1.0% gain or loss on the market assets (the plan currently amortizes asset gains/losses over a period of 15 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 6.8 indicates that a:

- 1% liability gain/loss can be related to about 6.8% of the annual payroll.
- The funding policy contribution changes by about 0.6% of payroll for each 1.0% gain or loss on the AAL (the plan currently amortizes asset gains/losses over a period of 15 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 are generally more important than the nominal size of the metric itself relative to a benchmark rate or any other individual pension plan.

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 July 1, 2022 through June 30, 2024.

	FY 2023	FY 2024
1. Beginning of Year Assets	\$ 341,282,528	\$ 387,547,731
2. Additions		
a. Employer Contributions	\$ 11,681,292	\$ 23,130,923
b. Employee Contributions	5,849,846	6,519,948
c. Investment Income & Dividends	7,789,481	8,249,103
d. Increase/(Decrease) in Market Value of Investments	34,897,926	41,095,831
e. Total Additions	\$ 60,218,545	\$ 78,995,805
3. Deductions		
a. Benefit Payments	\$ 12,945,109	\$ 14,876,534
b. Administrative Expenses	232,206	199,945
c. Investment Expenses	776,027	983,085
d. Total Deductions	\$ 13,953,342	\$ 16,059,564
4. Net Increase (2.e. – 3.d.)	\$ 46,265,203	\$ 62,936,241
5. Net Assets (1. + 4.)	\$ 387,547,731	\$ 450,483,972
6. Rate of Return Net of Investment Fees [2I / (A + B – I) Method]	12.2%	12.2%
7. Expected Market Value of Assets	\$ 369,675,934	\$ 429,751,940
8. Actuarial (Gain)/Loss (7. – 5.)	\$ (17,871,797)	\$ (20,732,032)

Development of Actuarial Asset Value

The actuarial asset value as of July 1, 2024 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.

7/1/2024					
1. Market Value of Assets					\$ 450,483,972
2. Spreading of Investment (Gain)/Loss					
BOY	EOY	(Gain)/Loss	% Deferred	Amount Deferred	
2023	2024	\$ (20,732,032)	80%	\$ (16,585,626)	
2022	2023	(17,871,797)	60%	(10,723,078)	
2021	2022	82,221,460	40%	32,888,584	
2020	2021	(63,405,960)	20%	(12,681,192)	
2019	2020	5,921,876	0%	0	
a. Total Deferred					(7,101,312)
3. Preliminary Actuarial Value of Assets (1. + 2.a.)					\$ 443,382,660
4. Minimum Actuarial Value of Assets (0.5 x 1.)					\$ 225,241,986
5. Maximum Actuarial Value of Assets (1.5 x 1.)					\$ 675,725,958
6. Actuarial Value of Assets (3., but not less than 4. or more than 5.)					\$ 443,382,660
7. Rate of Return Net of Investment Fees					7.5%

Reconciliation of Actuarial Asset Value

Below is a reconciliation of the Actuarial Asset Value from July 1, 2023 through June 30, 2024.

Actuarial Value of Assets	FY 2024
1. Actuarial Value of Assets as of July 1, 2023	\$ 398,405,160
2. Contributions to the Plan	
a. County	\$ 23,130,923
b. Employee	6,519,948
c. Total Contributions	\$ 29,650,871
3. Plan Disbursements Not Related to Investments	
a. Benefit Payments	\$ 14,876,534
b. Administrative Expenses	199,945
c. Total Disbursements	\$ 15,076,479
4. Expected Actuarial Value of Assets (1. x 1.07 + [2.c. - 3.c.] x 1.03441)	\$ 441,369,390
5. Actuarial Value of Assets as of July 1, 2024	\$ 443,382,660
6. (Gain)/Loss Due to Assets (4. - 5.)	\$ 2,013,270
7. Rate of Return Net of Investment Fees (2I / [A + B - I] Method)	7.5%

Recognition of Deferred Asset Gains and Losses

The table below shows the valuation years (2025 to 2028) in which the (\$7,101,312) in net deferred asset gains will be recognized.

FYE	(Gain)/Loss	2025	2026	2027	2028
2021	\$ (63,405,960)	\$ (12,681,192)			
2022	\$ 82,221,460	\$ 16,444,292	\$ 16,444,291		
2023	\$ (17,871,797)	\$ (3,574,359)	\$ (3,574,359)	\$ (3,574,361)	
2024	\$ (20,732,032)	\$ (4,146,406)	\$ (4,146,406)	\$ (4,146,406)	\$ (4,146,408)
Total		\$ (3,957,665)	\$ 8,723,526	\$ (7,720,767)	\$ (4,146,408)

Section VI. Participant Information

Participant Summary

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

	July 1, 2023	July 1, 2024
1. Actives		
a. Number	863	889
b. Average Age	35.73	36.27
c. Average Service	9.27	9.62
d. Average Salary	\$ 83,057	\$ 88,602
2. Members in DROP		
a. Number	11	7
b. Average Age	50.71	48.43
c. Total Annual Benefits	575,716	387,626
3. Service Retirements		
a. Number	287	308
b. Average Age	58.68	59.05
c. Total Annual Benefits	\$ 12,293,689	\$ 13,744,139
4. Disability Retirements		
a. Number	20	20
b. Average Age	57.00	58.00
c. Total Annual Benefits	\$ 706,318	\$ 715,012
5. Beneficiaries		
a. Number	23	26
b. Average Age	59.83	59.54
c. Total Annual Benefits	\$ 685,260	\$ 765,079
6. Vested Terminations		
a. Number	31	37
b. Average Age	39.9	39.11
c. Total Annual Benefits	\$ 465,994	\$ 567,865
7. Former Members Owed Refunds		
a. Number	79	70
b. Total Refunds Owed	\$ 395,338	\$ 377,569
8. Transfer to Non-Benefiting		
a. Number	0	0
b. Total Refunds Owed	\$ 0	\$ 0

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 projected pay for the plan year beginning July 1, 2024.

	Years of Service as of 07/01/2024								
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+	Total
Under 20	11								11
	52,650								52,650
20 - 24	91	1							92
	58,416	71,917							58,562
25 - 29	108	67							175
	64,538	78,469							69,871
30 - 34	49	92	30						171
	64,524	82,888	99,157						80,480
35 - 39	23	44	33	71					171
	65,561	81,026	103,056	112,110					96,104
40 - 44	9	15	8	80	10				122
	67,374	85,104	101,511	113,637	128,172				107,112
45 - 49	4	9	3	20	26	5			67
	66,056	80,531	92,821	107,749	132,523	134,206			112,523
50 - 54	1	3	6	12	16	9	2		49
	57,295	85,981	97,817	111,600	125,933	143,612	169,173		120,145
55 - 59	3	1	2	3	8	1	1	2	21
	76,953	84,489	87,146	113,618	129,751	195,590	135,876	152,442	119,279
60 - 64			1		2			2	5
			82,187		157,636			187,010	154,296
65 - 69		1		1	2			1	5
		157,561		103,858	108,874		127,813		121,396
70 & Up									0
									0
Totals	299	233	83	187	64	15	4	4	889
	62,520	81,637	100,114	112,244	129,895	143,942	150,508	169,726	88,602

Averages

Age 36.27

Service 9.62

Participant Reconciliation

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

	Active	DROP	Retirees	Disabled	Beneficiaries	Inactive Participants	Refunds Owed	Transferred to Non-Ben	Total
						Terminated	Vested		
Participants in last valuation	863	11	287	20	23	31	79	-	1,314
New participants	73						2		75
Return to active status	1						(1)		-
Grant Funded participants									-
Transferred to non-benefitted									-
Nonvested termination	(16)						16		-
Vested termination	(8)						8		-
Retired	(15)	(4)	21				(2)		-
Disabled									-
Entered DROP									-
Return of employee contributions	(9)						(26)		(35)
Adjustments									-
Died with survivor benefits				(1)					(1)
Died without survivor benefits				(2)					(2)
Beneficiary					3				3
QDRO			3						3
Participants in this valuation	889	7	308	20	26	37	70	-	1,357

Retiree Participant Distribution

Shown below is the monthly benefits of retirees by age.

Age Nearest Birthday	Number of Participants	Monthly Pension	Average Monthly Pension
49 and under	41	\$ 161,929	\$ 3,949
50 – 54	54	209,364	3,877
55 – 59	80	315,493	3,944
60 – 64	54	192,053	3,557
65 – 69	41	143,548	3,501
70 – 74	21	80,282	3,823
75 and over	17	42,675	2,510
Total	308	\$ 1,145,345	\$ 3,719

Disability Participant Distribution

Shown below is the monthly benefits of disabled participants by age.

Age Nearest Birthday	Number of Participants	Monthly Pension	Average Monthly Pension
39 and under	1	\$ 5,531	\$ 5,531
40 – 44	2	6,679	3,339
45 – 49	2	7,834	3,917
50 – 54	2	5,232	2,616
55 – 59	5	13,426	2,685
60 – 64	2	4,950	2,475
65 – 69	3	7,775	2,592
70 and over	3	8,157	2,719
Total	20	\$ 59,584	\$ 2,979

Beneficiary Participant Distribution

Shown below is the monthly benefits of beneficiaries by age.

Age Nearest Birthday	Number of Participants	Monthly Pension	Average Monthly Pension
49 and under	8	\$ 22,264	\$ 2,783
50 – 54	1	4,349	4,349
55 – 59	2	6,723	3,362
60 – 64	3	12,003	4,001
65 – 69	4	9,367	2,342
70 – 74	4	5,148	1,287
75 and over	4	3,903	976
Total	26	\$ 63,757	\$ 2,452

Terminated Vested Participant Distribution

Shown below is the monthly benefits of terminated vested participants by age.

Age Nearest Birthday	Number of Participants	Monthly Pension	Average Monthly Pension
29 and under	2	\$ 1,404	\$ 702
30 – 34	11	10,077	916
35 – 39	6	10,553	1,759
40 – 44	10	15,608	1,561
45 – 49	6	8,636	1,439
50 – 54	2	1,045	522
55 – 59	0	0	0
60 and over	0	0	0
Total	37	\$ 47,322	\$ 1,279

Section VII. Summary of Plan Provisions

Effective Date

July 1, 2021. Prior to July 1, 2021, uniformed members were in the Frederick County Employees Retirement Plan. The plan was most recently amended effective December 24, 2022.

Plan Year

July 1 – June 30.

Eligibility

All Uniformed employees who work at least 50% of the hours normally worked by other employees in the same position are eligible to participate. Participation starts on the date of employment.

Service

Prior to July 1, 1993

Prior to July 1, 1993: as defined by the Maryland State Retirement System

Creditable From July 1, 1993

A plan year in which the employee completes the required number of hours in a full-time schedule. Partial credit is granted in plan years where the employee completes at least 700 hours (except for the years of hire and termination). The amount of partial credit is determined by the ratio of actual hours to full-time hours.

Eligibility From July 1, 1993

A plan year in which the employee completes at least 700 hours. During the year of termination, fractional credit is based on the number of completed whole months. In the year of employment, fractional credit is based on the number of months, where working one day during the month is equivalent to working the entire month.

For purposes of normal, early and delayed retirement, credit for unused sick leave is determined by dividing the number of sick leave hours by the number of hours in the participant's regularly scheduled workday. This result is divided by 22 then divided by 12 and rounded to four decimal places. The maximum amount of Creditable Service for unused sick leave is two years.

Credit for Other Service

A participant may receive transferred service credit for service earned in a defined benefit plan sponsored by the State of Maryland or another Maryland county or municipal employer if the participant does not have a break in employment and satisfies several other requirements.

A participant may receive up to five years of service credit for pre- employment military service once the participant has earned ten years of Eligibility Service based on employment with the County. A participant may also receive credit for up to five years of service, if the participant's employment with the County is interrupted by military service and the participant returns to County employment within one year of their discharge from the Armed Services.

A participant may receive up to ten years of service credit for service earned with other governmental or educational employers. To receive this credit, a participant must pay the full cost of the service and must not be eligible to receive a pension for the service from the prior employer.

Employee Contributions

Participants contribute 9% of compensation (was 8% prior to July 1, 2012).

Contributions stop once an employee has 28 years of Creditable Service.

Employee contributions are “picked-up” by the County.

Upon leaving employment for any reason, accumulated contributions are returned if not eligible for plan benefits. Furthermore, plan benefits must be at least equal to the actuarial equivalent of accumulated contributions. Accumulated contributions are credited with interest of 4% each July 1 and cease on July 1 following twelve months after termination.

Members who receive their accumulated contributions forfeit any additional plan benefits.

Highest Average Compensation

Average compensation for the 36 consecutive months of employment with the County which produce the highest average.

Compensation is base salary excluding overtime, bonuses, etc.

Normal Form

Life annuity with guaranteed return of employee contributions, if not withdrawn.

Normal Retirement Date

First of the month coincident with or immediately following the earlier of:

Hired prior to July 1, 2011

- a. Attainment of age 50 and completion of 5 years of Eligibility Service.
- b. The completion of 20 years of Eligibility Service.

Hired after June 30, 2011

- a. Attainment of age 55 and completion of 5 years of Eligibility Service
- b. The completion of 25 year of Eligibility Service.

Normal Retirement Benefit

2.50% of Highest Average Compensation multiplied by Creditable Service not greater than 20 years plus 2.00% of Highest Average Compensation multiplied by Creditable Service in excess of 20 years, but not greater than 8 years (plus unused sick leave not greater than 2 years).

Early Retirement Date

Not available.

Late Retirement

A participant who defers retirement until after normal retirement date will receive a benefit determined on the basis of Highest Average Compensation and Creditable Service as of his actual retirement date (limited to 28 years, plus unused sick leave not greater than 2 years).

Disability Retirement

A participant who becomes totally and permanently disabled may retire prior to normal retirement and receive a benefit. The amount of the benefit depends upon the cause of disability.

Ordinary Disability

If vested, the lesser of:

- a. 50% of Highest Average Compensation
- b. The benefit the participant would have earned by age 50 for employees hired before July 1, 2011 or 55 if hired after June 30, 2011.

If not vested, a return of employee contributions with interest.

Line of Duty Disability

Participants must be vested to be eligible for this benefit

The greater of:

- a. The Ordinary Disability Benefit
- b. The lesser of:
 - i. 66 $\frac{2}{3}$ % of Highest Average Compensation
 - ii. 100% of Highest Average Compensation less any Social Security disability benefits.

To be eligible for Line of Duty Disability, the disability must be ruled compensable under Workers' Compensation.

Disability benefits are reduced by \$1.00 for each \$1.00 of Workers' Compensation benefits.

The following provisions apply to the disability benefits:

- Line of Duty benefits are split into "Catastrophic" and "Non- Catastrophic" benefits.
- To be eligible for "Catastrophic" Line of Duty Disability benefits, a participant must be eligible for Social Security disability benefits.
- "Catastrophic" Line of Duty Disability benefits are 66 $\frac{2}{3}$ % of Highest Average Compensation as of Date of Disability.
- "Non-Catastrophic" Line of Duty Disability benefits are 66 $\frac{2}{3}$ % of Highest Average Compensation as of Date of Disability. The monthly payment changes to a projected retirement benefit (based on projected Highest Average Compensation adjusted with inflation and Service) at the participant's Normal Retirement Date (based on age or projected service).
- There is no earned income offset for participants collecting a Catastrophic Line of Duty Disability benefit. For Ordinary and Non-Catastrophic Line of Duty:
 - The earned income offset is eliminated when the participant reaches his/her Normal Retirement Date (based on age or projected service).
 - A participant can earn up to 25% of their Highest Average Compensation (adjusted with inflation) before an earned income offset applies.
 - Earned income above the 25% of Highest Average Compensation threshold reduces the disability benefit \$1.00 for every \$2.00 earned.

Preretirement Death Benefit Eligibility

100% vested or die in the line of duty.

Preretirement Death Benefit

Annuity calculated as if participant had become disabled and elected a 100% Joint and Survivor Annuity.

Termination Benefits

Participants who have completed at least 5 years of Eligibility Service are entitled to a benefit beginning at normal retirement date which is equal to the accrued benefit at termination.

Actuarial Equivalence

Mortality: Pub-2010 General Retirees Amount-Weighted Mortality with MP-2018 improvement scale projected to 2035, blended 50% male/50% female

Interest: 7%

COLA: 1%

Cost-of-Living Adjustment (COLA)

Effective July 1, 2023, the COLA is based on the change in the CPI, with a floor of 1% and a cap of 3%. The CPI basis is the CPI for Urban Wage Earners and Clerical Workers (CPI-W) Washington-Arlington-Alexandria, DC-VA-MD-WV, All Items, 1982-1984 = 100 and the change is measured using the CPI as of the March 1 preceding the valuation date and the CPI as of the March 1 immediately preceding the March 1 preceding the valuation date.

Optional Forms

10 Year Certain and Continuous.

50% or 100% Joint and Survivor (with or without pop-up).

Lump Sum (for return of employee contributions only).

DROP

Allows accumulation of pension after reaching the service only requirement for normal retirement. DROP period must be between one and three years. COLAs are included during the DROP period.

Firefighters: member must exit DROP by 31 years of eligibility service. DROP account is invested in individually directed accounts. Employee contributions of 5% are credited to the DROP accounts and the remaining 4% is paid to the plan trust.

Remaining members: member must exit DROP by 28 years of eligibility service. DROP account is invested in individually directed accounts. Employee contributions continue during DROP participation but are not credited to the DROP account balance.

Changes in Plan Provisions Since Prior Valuation

None.

Section VIII. Actuarial Methods and Assumptions

Actuarial Cost Method

Liabilities are computed using the Projected Unit Credit method. The actuarial accrued liability reflects each participant's benefits under the Plan as they would accrue; taking into consideration future salary increases and the Plan's benefit formula. Thus, the total pension to which each participant is expected to become entitled at retirement is broken down into units, each associated with a year of past or future credited service.

A description of the calculation follows:

An individual's accrued benefit for valuation purposes related to a particular separation date is the accrued benefit described under the Plan as of the separation date, multiplied by the ratio of service on the valuation date over service as of the expected separation date.

An individual's actuarial accrued liability is the present value of the accrued benefit for valuation purposes at the beginning of the plan year, and the normal cost is the present value of the benefit deemed to accrue in the plan year. Because multiple decrements are used, the actuarial accrued liability and the normal cost for an individual are the sum of the component actuarial accrued liabilities and normal costs associated with the various anticipated separation dates. Such actuarial accrued liabilities and normal costs reflect the accrued benefits as modified to obtain the benefits payable on those dates and the probability of the individual separating on those dates.

The Plan's normal cost is the sum of the individual normal costs, and the Plan's actuarial accrued liability (AAL) is the sum of the actuarial accrued liabilities for all participants under the Plan.

Amortization of Unfunded Actuarial Accrued Liability

Actuarial gains and losses as well as assumption changes are amortized over closed 15-year periods effective with each valuation. Plan changes are amortized over a closed 15-year period (with the exception of any early retirement incentives and ad-hoc cost-of-living adjustments, which are amortized over closed periods of up to 5 years and 3 years, respectively).

Actuarial surplus is amortized over an open 30-year period. Upon reaching a surplus position, all prior bases are eliminated. When in a surplus position, the impact of plan changes and assumption changes which increase the UAAL are still amortized separately in layers but gains and losses are rolled into the open surplus amortization. If, subsequent to reaching a surplus position, the plan falls again into an unfunded position, the layered amortization methodology described in the previous paragraph again applies, with one exception: annual gains and losses roll into the credit amortization base (from when the plan was in surplus), which is amortized over an open 30 years while the base is a credit. If the base turns into a charge base, then the separate 15-year amortization layer methodology for gains and losses once again applies.

All bases are amortized as a level percent of payroll, which is assumed to increase 2.5% per year.

Actuarially Determined Contribution (ADC)

The ADC is equal to the employer normal cost, including expected administrative expenses, plus the sum of the layered amortization amounts.

Funding Policy

The County's funding policy is to contribute the maximum of:

- 1) The Actuarially Determined Contribution (ADC) as a percentage of payroll
- 2) Two times the expected employee contributions as a percentage of payroll
- 3) If the funded status of the plan is less than 95%, the ADC plus an annual amount that if contributed in addition to the ADC over the next five years is expected to bring the plan to full funding (a funded status of 100%)

If a significant change has been made to improve members' benefits, then an exception to the funding policy may be made, at the direction of the County Executive and County Council.

The cost-of-living (COLA) provision was improved, effective with the July 1, 2022 valuation and was deemed to be a significant change eligible for this exception. The impact of this change is amortized over a 15-year period, beginning July 1, 2022. The 95% funded test in component 3 and any additional contributions required under component 3 of the funding policy are determined based on the actual plan liability, reduced by the outstanding balance of this base. The amortization of this base is then added to the preliminary component 3 result to determine the final funding policy contribution under component 3.

Method for Allocating the Market Value of Assets

On July 1, 2021, 57.93% of the market value of assets was allocated to the Frederick County Employees Retirement Plan (Non-Uniformed) and 42.07% was allocated to the Frederick County Uniformed Employees Retirement Plan (Uniformed).

After July 1, 2021, assets are accounted for separately by plan.

Method for Determining Actuarial Value of Assets

The asset valuation method is the smoothed market value method, using a smoothing period of five years. The actuarial value of assets will equal the market value of assets with gains subtracted or losses added (relative to the expected market value of assets) at the rates described below:

- a. 4/5 of the prior year's gain or loss
- b. 3/5 of the second preceding year's gain or loss
- c. 2/5 of the third preceding year's gain or loss
- d. 1/5 of the fourth preceding year's gain or loss

The gain or loss for a year is determined by calculating the difference between the expected value of assets for the year and the market value of assets at the valuation date. The expected value of assets for the year is the market value of assets at the prior-year valuation date brought forward with interest at the valuation interest rate to the current valuation date, plus contributions minus benefit disbursements and expenses, all adjusted with interest at the valuation rate to the current valuation date. If the expected value is greater than the market value, there is a loss.

The actuarial value of assets shall be limited to be between 50% and 150% of the market value of assets.

Investment Return

7.00%, compounded annually, net of investment expenses.

Administrative Expenses

Total administrative expenses for the fiscal year are assumed to be the average of the administrative expenses for the prior two years, rounded to the nearest \$10,000.

Salary Increases

Law Enforcement/Corrections

Years of Service	Increase
0 – 3	10.00%
4 – 9	8.25%
10 – 14	7.00%
15 – 19	6.50%
20+	4.50%

We assume that law enforcement/corrections pay increases occur in the middle of the fiscal year, because they occur on employment anniversary dates.

Salary Increases

Fire/Rescue

Years of Service	Increase
0 – 3	9.00%
4 – 9	8.00%
10 – 14	6.50%
15+	4.50%

Cost of Living Increase in Benefits

2.3%, compounded annually.

Inflation

2.5%, compounded annually.

Payroll Increase

2.5%, compounded annually.

Mortality

Pre-Retirement

70% of Pub-2010 Safety Employees Amount-Weighted Mortality table with fully generational projection using scale MP2018.

20% of active participant mortality is assumed to be service connected.

Post Retirement

Pub-2010 General Retirees Amount-Weighted Mortality table with fully generational projection using scale MP2018.

Disabled Post Retirement

Pub-2010 General Disabled Retirees Amount-Weighted Mortality table with fully generational projection using scale MP2018.

The projection to the year of the valuation is assumed to be current mortality experience. The generational projection beyond the year of the valuation is assumed to account for future mortality improvements.

Termination of Employment

Years of Service	Rate
0	9.00%
1	6.50%
2	5.00%
3	5.00%
4	5.00%
5 – 6	2.25%
7	2.25%
8	2.25%
9	1.75%
10 – 11	1.75%
12	1.75%
13 – 14	1.75%
15 – 19	1.00%
20+	0.50%

Non-Vested Terminations

We value non-vested terminations based on the amount of their employee contributions with interest, which is assumed to be paid on the valuation date.

Retirement Rates (Reflect DROP Entry)

Participants Hired Prior to July 1, 2011

Age	Service		
	15	20	21+
50	18%	40%	14%
55	8%	40%	8%
60	8%	40%	8%
65	15%	40%	15%
67	100%	100%	100%

For participants hired prior to June 30, 2011, current and future terminated vested participants are assumed to commence benefits at age 50.

Participants Hired After June 30, 2011 (Firefighters)

Age	Service		
	20	25	26+
55	50%	50%	20%
60	10%	50%	20%
62	25%	50%	25%
65	15%	50%	20%
67	100%	100%	100%

Participants Hired After June 30, 2011 (Non-firefighters)

Age	Service		
	20	25	26+
55	50%	65%	10%
60	10%	65%	10%
62	25%	65%	25%
65	15%	65%	15%
67	100%	100%	100%

For participants hired after June 30, 2011, current and future terminated vested participants are assumed to commence benefits at age 55.

Disability Rates

Sample disability rates are as follows:

Age	Rate
25	0.0633%
35	0.1092%
45	0.2404%
55	0.7476%

70% of the disabilities are assumed to be Line of Duty. 40% of the Line of Duty disabilities are assumed to be Catastrophic.

Sick Leave

The service credit for unused sick leave is assumed to be 2.00% of Creditable Service from all other sources.

Beneficiary Demographics

100% assumed to have a beneficiary with female beneficiaries 3 years younger than the male participant and male beneficiaries 3 years older than the female participant.

Form of Payment

Future retired and disabled participants are assumed to elect a life annuity with mandatory return of employee contributions. Future terminated vested participants are assumed to elect the greater of the return of employee contributions and a deferred life annuity with mandatory return of employee contributions.

Guaranteed Return Period for Employee Contributions

Three years.

Pre-Employment Military Service

We assume that after earning 10 years of eligibility service each participant will receive credit of 0.6 years of pre-employment military service.

Earned Income Offset for Future Disabled Participants

We assume that no disabled participant will have an earned income offset.



Job Classification Transfers

We value participants who are job classification transfers (e.g. Uniformed to Non-Uniformed) as if they always worked in their current positions.

We value employees who transferred to a job classification that is no longer eligible for retirement benefits as separated non-vested participants.

Rationale for Assumptions

The key assumptions were based on the most recent Experience Study dated September 10, 2019. The discount rate is reviewed at least once annually.

Changes in Assumptions and Methods Since Prior Valuation

There were no changes in assumptions or methods since the prior valuation.

Section IX. 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. Assumptions of a long-term nature are representative of average expectations (i.e., they will not be exactly realized in every year, however over an extended period are a reasonable projection of future outcomes).

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 or Experience Gain or Loss

A measure of the difference between actual 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. Such gains or losses are not actual economic gains or losses immediately incurred by a plan, as experience in future years could offset the effect of experience in a single year due to the typically long-term average nature of actuarial assumptions.

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).

Funded Ratio

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

Low Default-Risk Obligation Measure (LDROM)

The present value of benefits accrued at the valuation date using actuarial assumptions that are generally the same as those used in determining the plan's funding liability, with the discount rate changed to reflect the expected return on a low-default-risk investment portfolio. For plans using a funding method that does not quantify gains and losses annually (but rather spreads them over future years through the changes in the normal cost), the actuarial cost method is also changed to reflect a different pattern of allocating costs to historical periods than is used to determine the ADC.

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 1

Summary of Funding Progress

Valuation Date	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability	(3) Percentage Funded	(4) Unfunded Actuarial Accrued Liability	(5) Annual Covered Payroll	(6) Unfunded Actuarial Accrued Liability as a Percentage of Covered Payroll (4) / (5)
			(1) / (2)	(2) - (1)		
7/1/2015	464,425,734	497,952,590	93.30%	33,526,856	100,998,017	33.20%
7/1/2016	507,387,475	535,381,083	94.80%	27,993,608	108,689,005	25.80%
7/1/2017	560,786,003	573,652,881	97.80%	12,866,878	114,631,335	11.20%
7/1/2018	618,216,079	618,091,606	100.00%	(124,473)	117,955,522	-0.10%
7/1/2019	672,178,511	660,653,672	101.70%	(11,524,839)	130,635,887	-8.80%
7/1/2020	723,825,038	709,960,247	102.00%	(13,864,791)	139,795,730	-9.90%
7/1/2021 ²	341,206,289	347,713,165	98.13%	6,506,876	59,739,878	10.89%
7/1/2022	371,267,904	440,867,158	84.21%	69,599,254	65,385,440 ³	106.44%
7/1/2023	398,405,160	485,771,840	82.01%	87,366,680	72,936,482 ⁴	119.78%
7/1/2024	443,382,660	539,631,893	82.16%	96,249,233	79,650,559 ⁵	120.84%

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 Frederick County's progress made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

² Note that all plan years prior to 7/1/2021 include both Uniformed and Non-Uniformed assets, liabilities and payroll since all participants were in one plan. Starting 7/1/2021 only Uniformed information is presented.

³ Includes payroll for members in DROP.

⁴ Includes payroll for members in DROP.

⁵ Includes payroll for members in DROP.

Appendix 2

Benefit Payment Projection

The following table shows the estimated benefit payments from July 1, 2024 through June 30, 2034 based on existing members of the plan.

Fiscal Year	Benefits
2025	18,313,000
2026	20,127,000
2027	22,699,000
2028	25,368,000
2029	27,762,000
2030	29,723,000
2031	31,734,000
2032	33,740,000
2033	35,609,000
2034	37,533,000