Howard County Retirement Plan
July 1, 2019 Actuarial Valuation Results

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Agenda

- Purpose
- Key Terms
- Data
- Results
- Assumption Discussion
- Additional Risks to Plan
- Risk Mitigation
- Recap

Purpose

- Funding Valuation
  - **Provides the County’s recommended contribution to the plan**
  - **July 1, 2019 valuation provides the County’s recommended contribution for FY2021**

- Accounting Valuation
  - **Provides information for the County’s financial statements**
  - **GASB 67/68**
  - **Not covered in today’s presentation**

Key Terms

- The County contributes an Actuarially Determined Contribution (ADC) to the Retirement Plan
  - **The ADC is used to help ensure sufficient assets are accumulated to pay the expected benefits**
  - **The ADC allocates the expected value of future benefits (paid after employment) to the service periods when they are earned**
  - **Contributing the ADC creates generational equity for taxpayers and added security for plan members**

- The Plan's assets relative to the Actuarial Accrued Liability provides the Plan's Funded Ratio
  - **The shortfall between the assets and the actuarial accrued liability is referred to as the Unfunded Actuarial Accrued Liability**
  - **A portion of the County's ADC is a payment toward reducing the Unfunded Actuarial Accrued Liability**

Participant Summary

	2015	2016	2017	2018	2019
Active	1,692	1,760	1,803	1,816	1,833
Terminated Vested	195	198	191	196	223
Retirees & Beneficiaries	619	660	731	787	840
Disabled	18	18	17	15	15
Total Population	2,524	2,636	2,742	2,814	2,911
Active Average Age	47.54	47.24	47.00	47.04	47.04
Active Average Service	11.07	10.97	10.79	10.80	10.70
Active Average Salary	$62,097	$62,854	$65,303	$66,761	$68,139

Results

	2018 Valuation For FY20	2019 Valuation For FY21 – 7.45%	2019 Valuation For FY21 – 7.40%
Contribution Amount	$14,808,044	$15,366,002	$15,548,241
Contribution as a Percentage of Payroll	11.6%	11.7%	11.8%
Funded Percentage	95.8%	96.8%	96.6%

- COLA is 2.70% when discount rate is 7.45% and 2.65% when discount rate is 7.40%

Historical County Contribution Rates

FYE	% of Payroll
6/30/2021	11.7% or 11.8%
6/30/2020	11.6%
6/30/2019	11.5%
6/30/2018	11.7%*
6/30/2017	11.6%*
6/30/2016	12.4%
6/30/2015	13.5%
6/30/2014	13.1%
6/30/2013	12.3%
6/30/2012	11.7%*

* County elected to contribute 11.9% in FY2012 and 12.4% in FY2017 and FY2018

Funded Ratio

	7/1/2016	7/1/2017	7/1/2018	7/1/2019
Actuarial Value of Assets	$378.0	$410.4	$444.8	$473.9
Actuarial Accrued Liabilities	$400.5	$431.0	$464.1	$490.7
Funded Ratio on AVA	94.4%	95.2%	95.8%	96.6%
Market Value of Assets	$362.3	$410.1	$447.8	$478.2
Funded Ratio on MVA	90.5%	95.2%	96.5%	97.5%
Unfunded Actuarial Accrued Liabilities based on AVA	$22.5	$20.6	$19.3	$16.8

(Dollars in millions)

- 7/1/2019 using 7.40% investment return and 2.65% COLA

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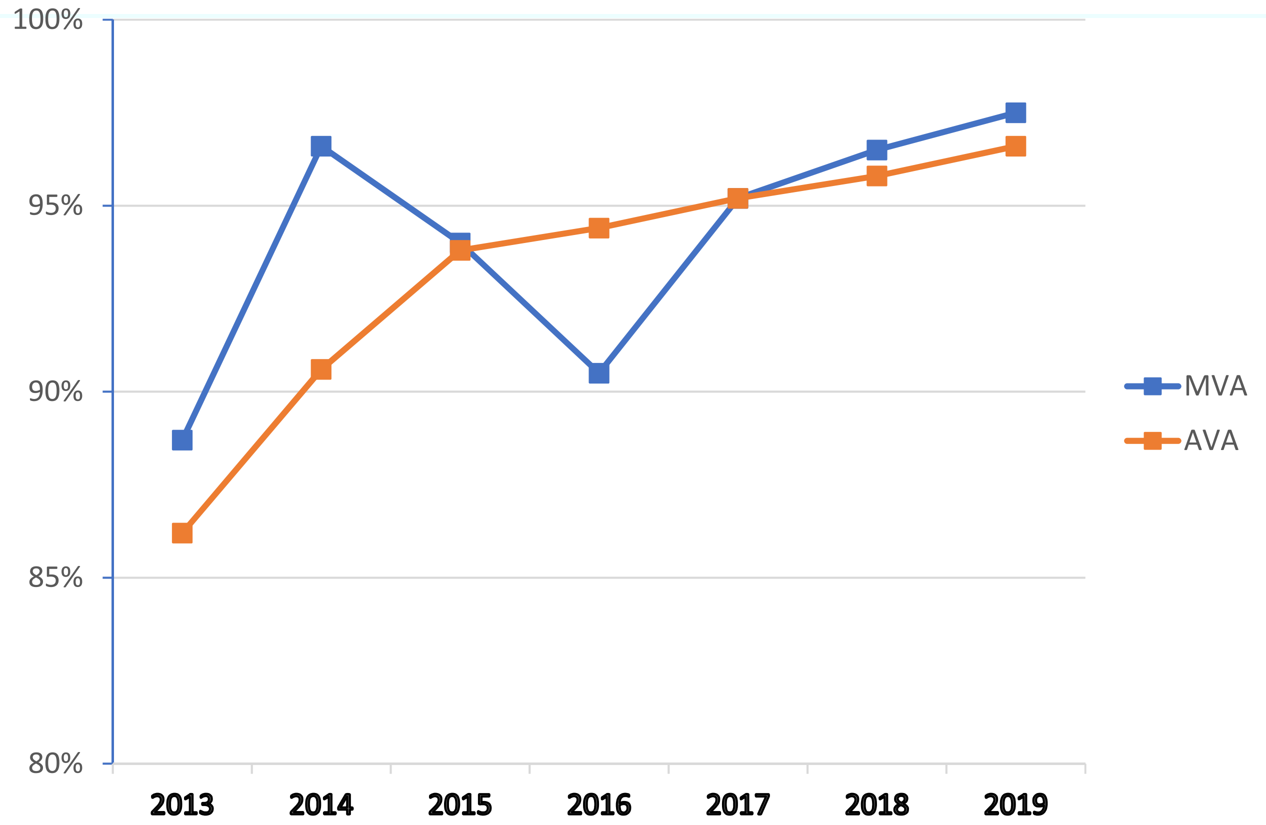
Funded Ratio



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Assumption Discussion

- **Recommended investment return and inflation/COLA reductions**
  - Decrease investment return assumption from 7.45% to 7.40%
  - Decrease inflation/COLA assumption from 2.70% to 2.65%
  - Revisit these assumptions each year and consider further reductions

- **Public Plan Mortality Tables**
  - Released in January 2019

Employee Group	Male	Female	Total
Teachers			
Safety			
General			

0% to 2% Increase in liability

2% to 4% Increase in liability

6% to 8% Increase in liability

Over 8% Increase in liability

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Historical Investment Returns

FYE	MVA	AVA
6/30/2019	7.0%	6.8%
6/30/2018	8.7%	7.9%
6/30/2017	12.5%	7.9%
6/30/2016	1.3%	6.0%
6/30/2015	2.9%	9.5%
6/30/2014	15.8%	11.6%
6/30/2013	11.8%	6.2%
6/30/2012	-0.9%	2.1%
6/30/2011	21.9%	5.1%
6/30/2010	14.8%	2.3%

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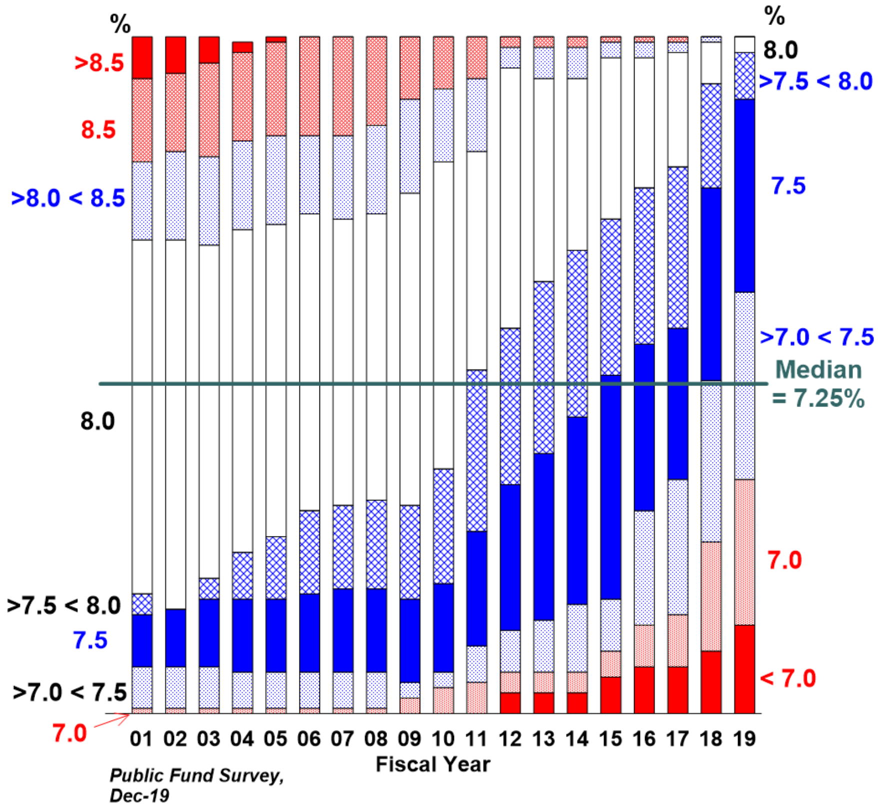
Investment Returns

LOCAL

County	Discount Rate
Anne Arundel County	7.45%
Baltimore County	6.375%
Calvert County	7.25%
Caroline County	7.00%
Carroll County	7.00%
Cecil County	7.00%
Charles County	7.40%/7.30%
Frederick County	7.00%
Harford County	7.00%
Montgomery County	7.50%
Prince George's County	7.25%
St. Mary's County	7.25%
State of Maryland	7.40%

NATIONAL



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Investment Returns

- NASRA Study of Investment Returns
  - **75% of 128 plans surveyed have reduced their investment return since 2010**
  - **Median return in 2010 was about 8%, currently 7.25%**
  - **Approximately 30% at 7% or lower**

- Maryland Pension Risk Mitigation Act
  - **Requires risk assessment of the Maryland State plan**
    - Primary risks focused on expected returns, asset allocation, and liquidity

ASOP 51

- Purpose
  - **Disclosure of the risk that actual future measurements may differ from expected future measurement**
  - **Future measurements include:**
    - Liabilities
    - Contributions
    - Funded ratios
- Types of risk
  - **Investment risk**
  - **Longevity risk**
  - **Contribution risk**
  - **Asset/liability matching risk**
  - **Interest rate risk**
- Effective Date
  - **Measurements after November 1, 2018**
  - **For Howard County, July 1, 2019 actuarial valuation**

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Risk Measures

Risk Measure	7/1/2017	7/1/2018	7/1/2019	Conservative Measure
Retiree Liability as a Percent of Total Liability	45%	47%	48%	<50%
Assets to Payroll	3.5	3.7	3.8	<5
Liabilities to Payroll	3.7	3.8	3.9	<5
Benefit Payments to Contributions	0.9	0.9	1.0	1-3

- 7/1/2019 using 7.40% investment return and 2.65% COLA

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Risk Mitigation

- Quantify investment risk
  - **Scenario test**
  - **Sensitivity test**
  - **Stochastic modeling**
  - **Stress test**

- Shared risk through plan design – NASRA paper
  - **Variable Employee Contribution Rates**
  - **Contingent or Limited Cost-of-Living Adjustments**
  - **Cash Balance Hybrid Plans**
  - **DB-DC Hybrid Plans**

- NASRA *Risk Sharing in Public Retirement Plans* - https://www.nasra.org/content.asp?contentid=124

Summary

- Current Year Valuation Highlights
  - **Increase in ADC as a percentage of payroll primarily due to potential decrease in discount rate**
  - **Continued increase in funded status**
  - **New ASOP 51 requirements**

- Future Considerations
  - **Continue to look at lowering discount rate**
  - **Quantification of risk**
  - **Review public plan mortality tables in next experience study**

Disclosures

- In preparing this presentation, we relied without audit, on information supplied by Howard County.
- The actuarial assumptions, data and methods are those used in the preparation of the latest actuarial valuation report prepared for this plan as of July 1, 2019.
- The assumptions reflect our understanding of the likely future experience of the plans and the assumptions as a whole represent our best estimate for the future experience of the plans. The results of this report are dependent upon future experience conforming to these assumptions. To the extent that future experience deviates from the actuarial assumptions, the true cost of the plans could vary from our results.
- We certify that, to the best of our knowledge, this report and its contents, which are work products of Bolton are complete and accurate and have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.
- Bolton's report was prepared exclusively for Howard County for a specific and limited purpose. It is not for the use or benefit of any third party for any purpose. The term third party does not include the County's auditor, attorney, third party administrator or other professional, when providing professional services to the County, or any governmental agency to which this certification is required to be submitted by law or regulation. Any third party recipient of Bolton's work product who desires professional guidance should not rely upon Bolton's work product, but should engage qualified professionals for advice appropriate to its own specific needs.