



Howard County Police and Fire Employees' Retirement Plan

July 1, 2020 Actuarial Report Highlights


Ann Sturner, FSA, EA, MAAA | Tom Lowman, FSA, FCA, EA, MAAA | Jordan McClane, FSA, EA, FCA, MAAA

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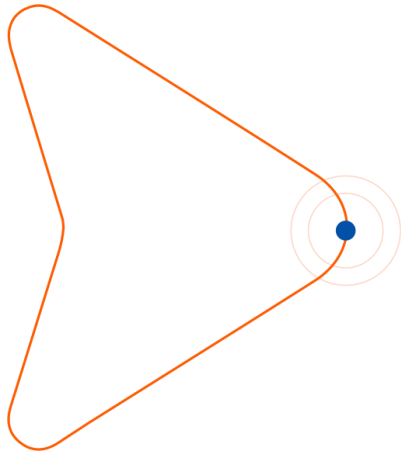
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Key Valuation Results

- Participant Summary
- Actuarially Determined Contribution
- Funded Status

Participant Summary

	2016	2017	2018	2019	2020
Active	799	830	821	847	876
DROP	73	74	79	82	71
Terminated Vested	19	18	18	22	26
Retirees & Beneficiaries	320	341	370	389	430
Disabled	33	33	34	36	35
Total Population	1,244	1,296	1,322	1,376	1,438
Active Average Age*	39.41	39.37	39.48	39.33	38.83
Active Average Service*	13.08	13.02	13.20	13.09	12.54
Active Average Salary*	\$86,787	\$88,574	\$90,960	\$91,690	\$92,599

*Includes participants in DROP

Actuarially Determined Contribution

	2019 Valuation for FY21 – 7.40%	2020 Valuation for FY22 – 7.40%	2020 Valuation for FY22 – 7.35%
Contribution Amount	\$30,756,436	\$32,275,712	\$33,138,107
Contribution as a Percentage of Payroll	34.2%	34.9%	35.8%
Funded Percentage	84.8%	86.6%	86.0%

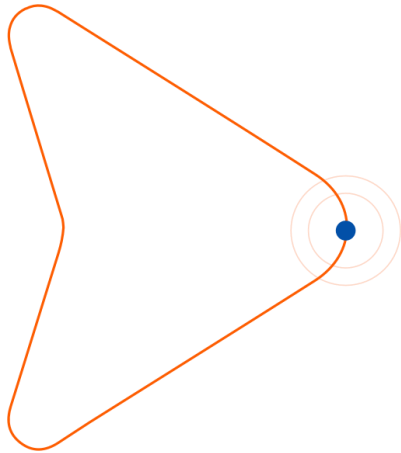
- COLA capped at 2% for both discount rates

Funded Status

	7/1/2017	7/1/2018	7/1/2019	7/1/2020
Actuarial Value of Assets	\$516.8	\$567.2	\$614.0	\$660.3
Actuarial Accrued Liabilities	\$625.9	\$680.9	\$723.7	\$768.1
Funded Ratio using AVA	82.6%	83.3%	84.8%	86.0%
Market Value of Assets	\$516.3	\$571.9	\$619.4	\$648.9
Funded Ratio using MVA	82.5%	84.0%	85.6%	84.5%
Unfunded Actuarial Accrued Liabilities based on AVA	\$109.1	\$113.7	\$109.7	\$107.8

(Dollars in millions)

- 7/1/2020 using 7.35% investment return and COLA capped at 2%



Discussion Items

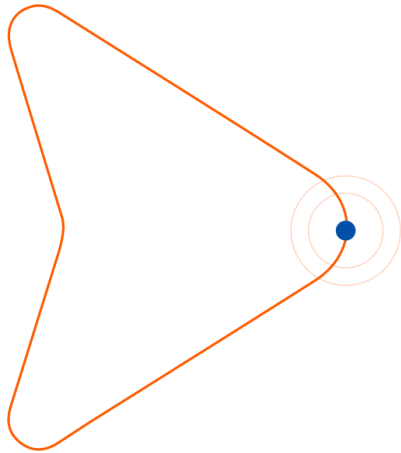
- Gain/Loss Discussion
- Assumption Discussion

Gain/Loss Discussion

- Minimal overall loss (~0.1% of liability) for the valuation due to small and offsetting gain/loss components
- Largest loss (\$3.7M) due to assets returning less than expected
 - **6.8% return on smoothed assets (AVA) compared to 7.4% expectation**
 - **4.0% return on market value of assets (MVA)**
- Small gain (\$0.5M) due to 1.8425% COLA less than the 2% assumed

Assumption Discussion

- Recommended investment return and inflation/COLA reductions
 - **Decrease investment return assumption from 7.40% to 7.35%**
 - **Decrease inflation/COLA assumption from 2.65% to 2.60% (COLA continues to be capped at 2%)**
 - **Revisit these assumptions next year and consider further reductions**
- Next experience study planned after completing the 2021 actuarial valuation



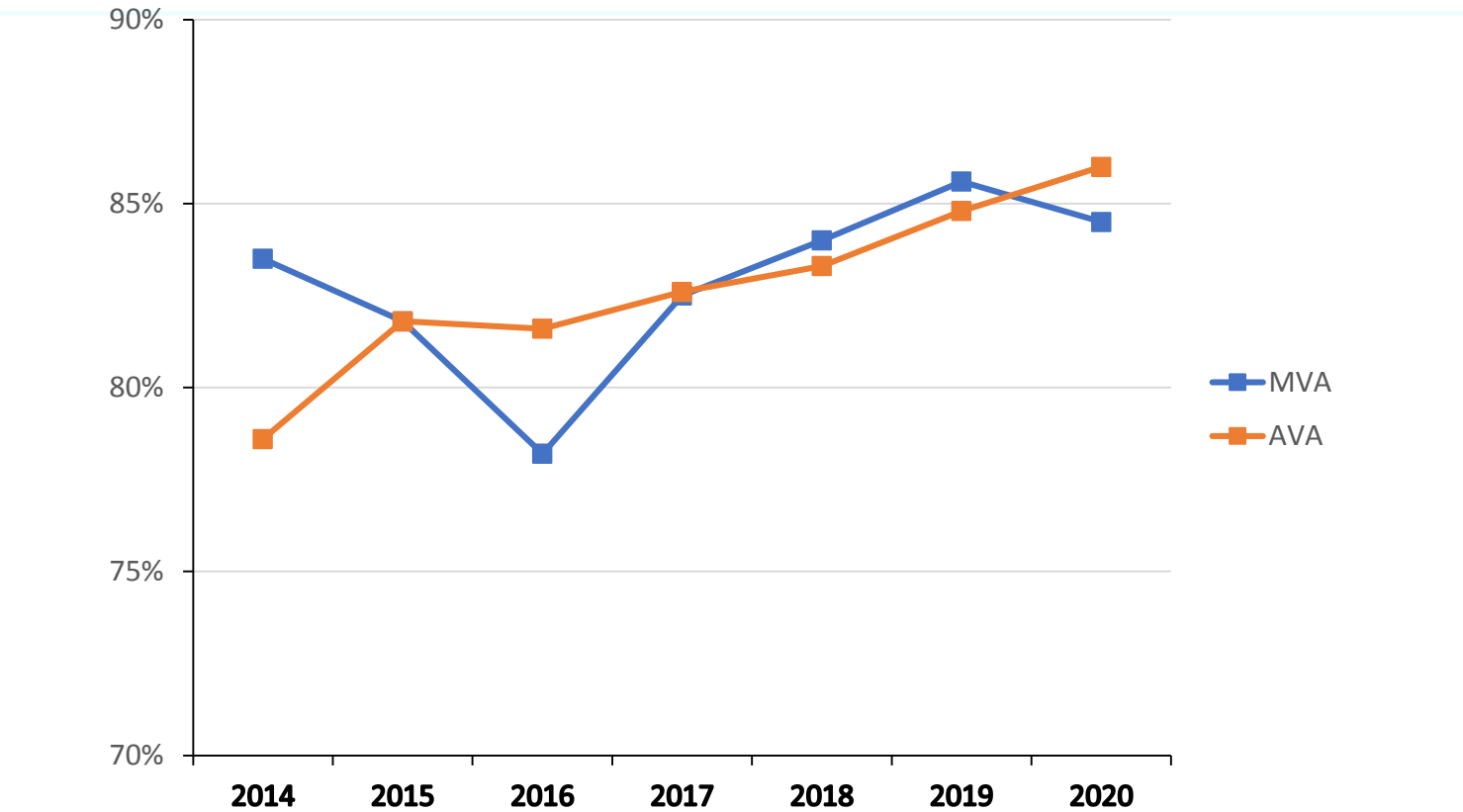
Historical Results

- County Contribution Rates
- Funded Status
- Investments Returns

Historical County Contribution Rates

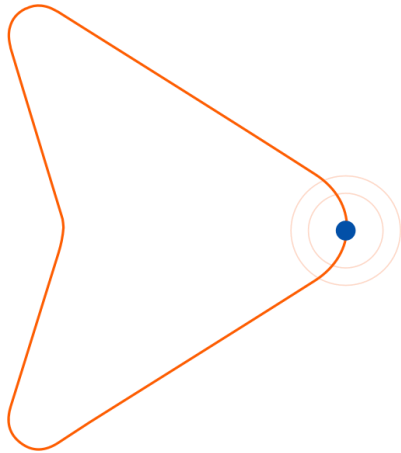
FYE	% of Payroll
6/30/2022	34.9% or 35.8%
6/30/2021	34.2%
6/30/2020	35.4%
6/30/2019	33.1%
6/30/2018	32.5%
6/30/2017	30.6%
6/30/2016	30.0%
6/30/2015	32.0%
6/30/2014	31.0%
6/30/2013	30.5%

Funded Status



Historical Investment Returns

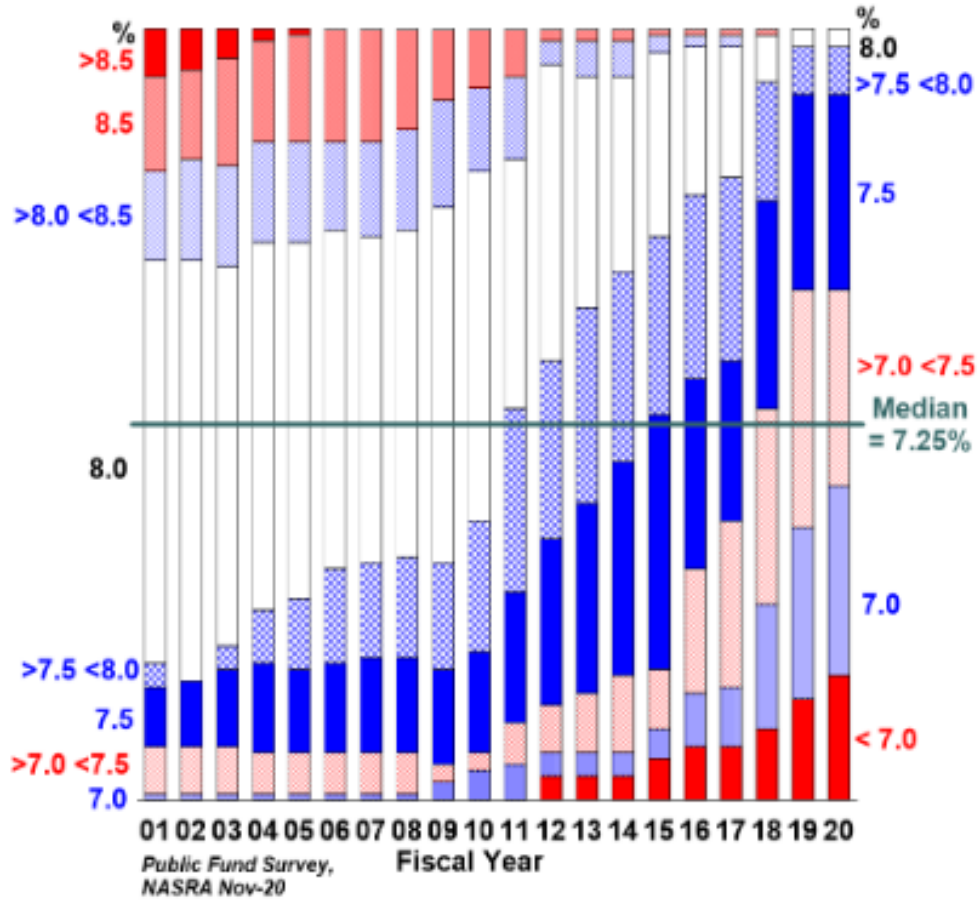
FYE	MVA	AVA
6/30/2020	4.0%	6.8%
6/30/2019	6.9%	6.8%
6/30/2018	8.9%	7.9%
6/30/2017	12.3%	7.8%
6/30/2016	1.5%	5.9%
6/30/2015	2.8%	9.0%
6/30/2014	15.7%	11.0%
6/30/2013	11.5%	5.9%
6/30/2012	-1.0%	3.9%
6/30/2011	20.2%	4.8%



Comparison to Other Plans

- NASRA Discount Rate Survey
- Local Discount Rate Survey
- NASRA Funded Status Survey
- Benchmarking Public Sector Plan Returns

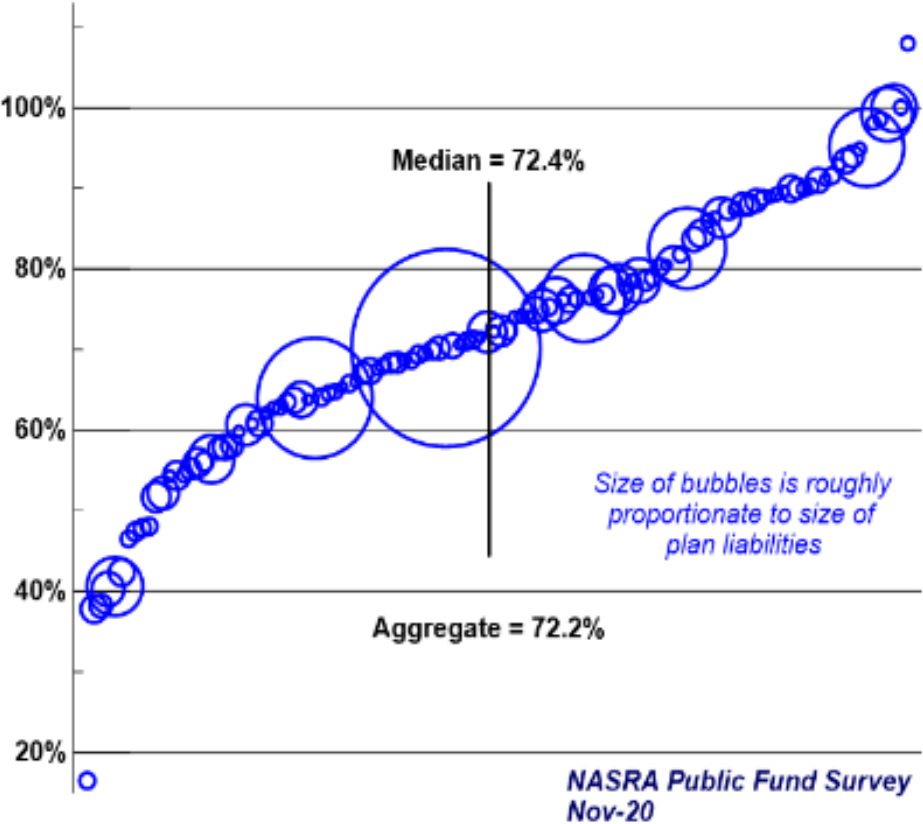
NASRA Discount Rate Survey

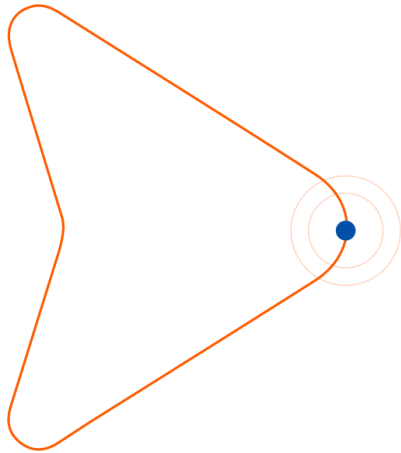


Local Discount Rate Survey

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%
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%

NASRA Funded Status Survey





Risk Measures

- Types of Risk
- Risk Measures
- Quantitative Risk Assessment Options

Types of Risk

- **Investment risk:** The potential that investment returns will be different than expected. The Committee is well aware of this risk.
- **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.
- **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.

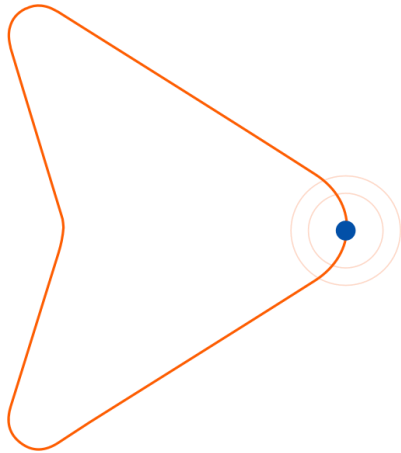
Risk Measures

Risk Measure	7/1/2018	7/1/2019	7/1/2020	Conservative Measures
Retiree Liability as a Percent of Total Liability	44%	45%	48%	<50%
Assets to Payroll	7.0	7.3	7.4	<5
Liabilities to Payroll	8.3	8.5	8.8	<5
Benefit Payments to Contributions	0.7	0.8	0.9	<3

- 7/1/2020 using 7.35% investment return and COLA capped at 2%

Quantitative Risk Assessments Options

- **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.
- **Sensitivity Test**—A process for assessing the impact of a change in an actuarial assumption on an actuarial measurement.
- **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.
- **Stress Test**—A process for assessing the impact of adverse changes in one or relatively few factors affecting a plan's financial condition.



Hot Topics

- Summary of Hot Topics

Summary of Hot Topics

- COVID-19 impacts (assets, revenue, payroll, line-of-duty benefits)
- Risk assessment
- Experience study
 - **Mortality**
 - **Actuarial equivalence**
- Variable annuity plans

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, 2020.
- 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.
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