



Chesapeake Bay Restoration

AGRICULTURE TAKES CENTER STAGE

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Chesapeake Bay Commission Meeting

September 10, 2020



Our History and Our Future Plans

What Level of Effort is Needed to Meet Water Quality Standards in the Chesapeake Bay?

- Over the past 34 years, nitrogen loads to the Chesapeake Bay have been reduced 81 M lbs.
 - Over the next 6 years, practices need to be in place to reduce nitrogen loads an additional 52 M lbs. to meet water quality standards.
- ⇒ The level of effort needed in the future is 4 times the historic rate of implementation.





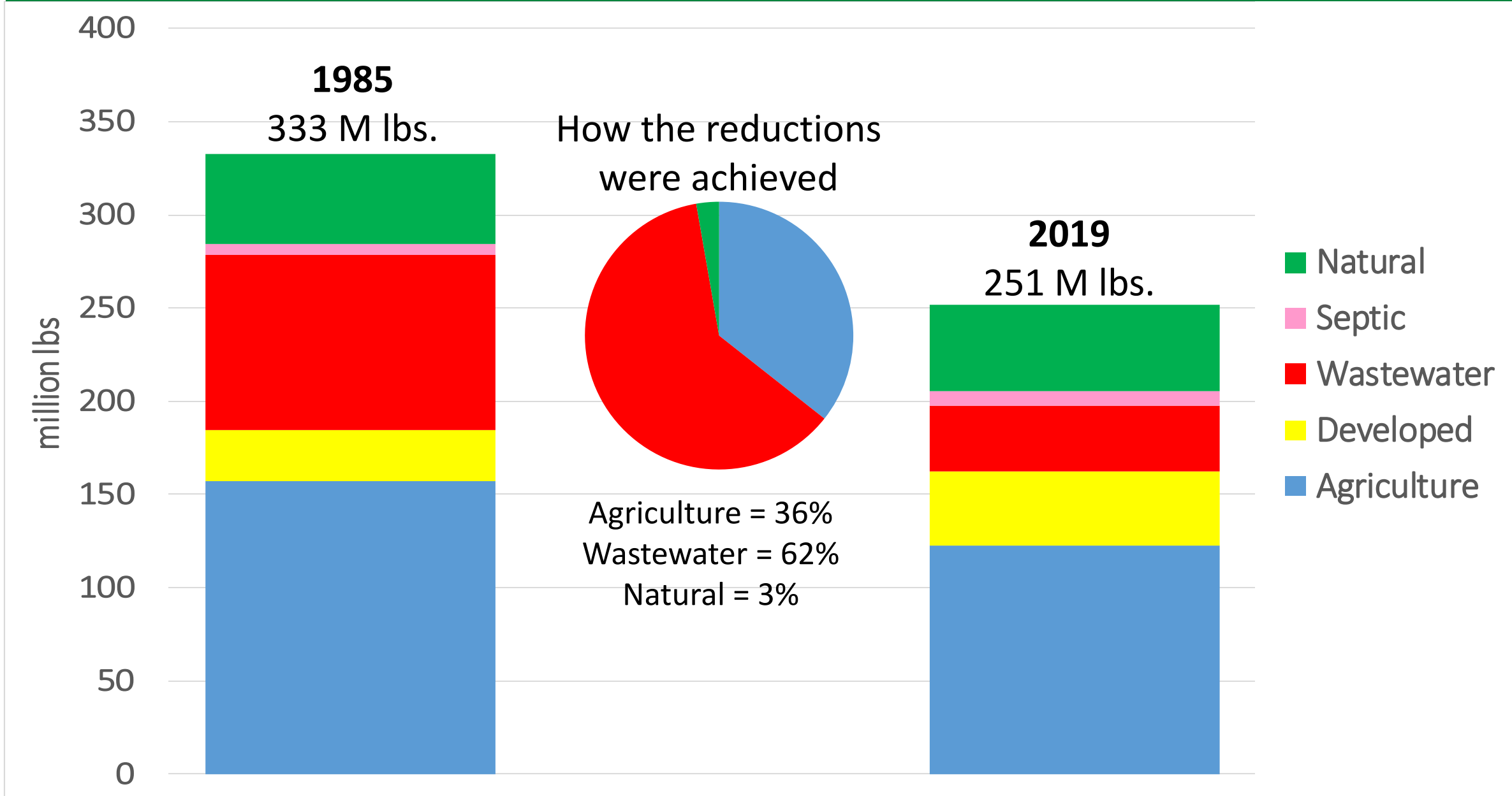
Our History and Our Future Plans

How much has/will agriculture contribute to nitrogen load reductions?

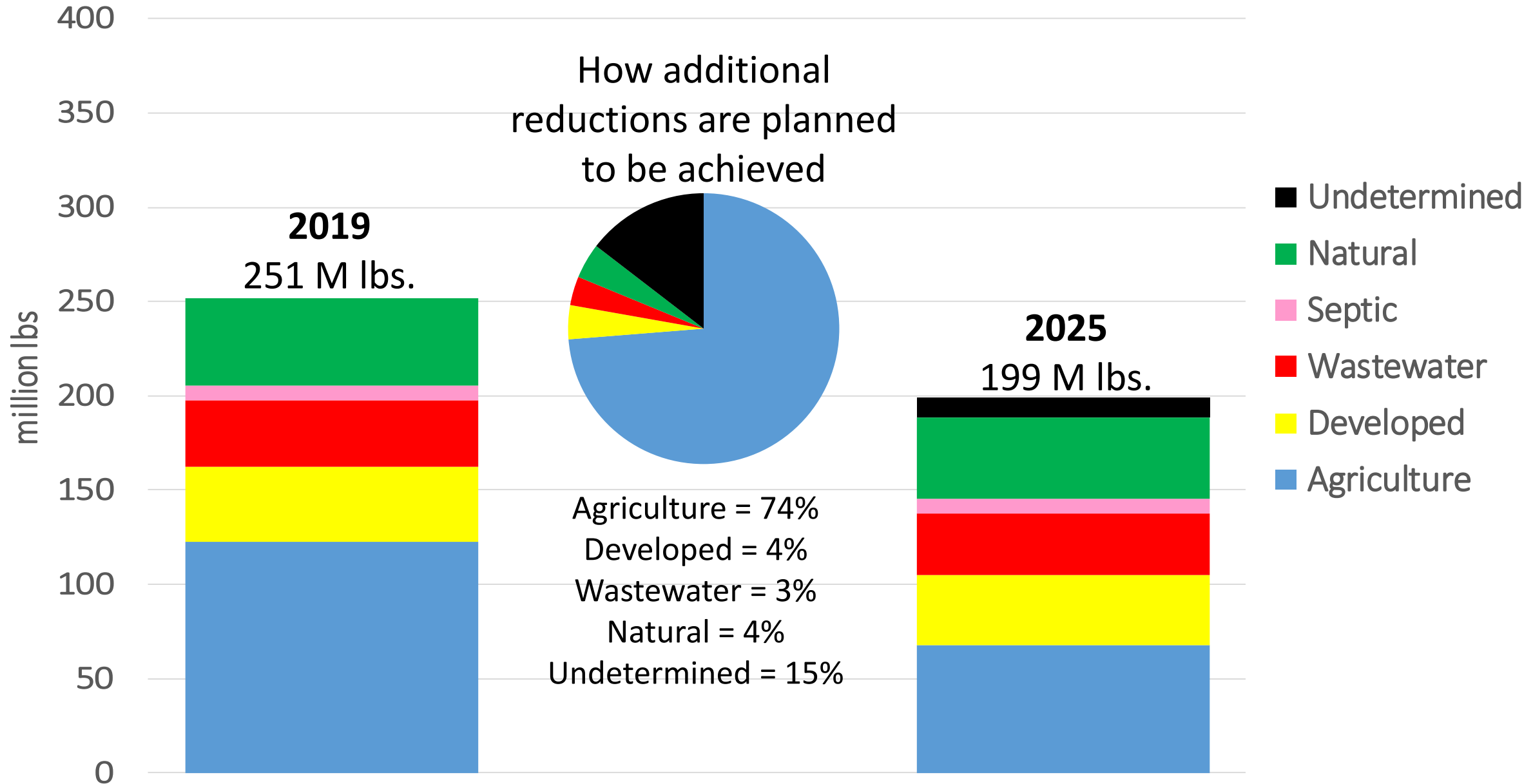
- Over the past 34 years, 62% of the nitrogen load reductions to the Chesapeake Bay have come from wastewater controls while 36% came from the agriculture sector.
- According to the jurisdictions' Phase III WIPs, over the next 6 years, about 4% of the nitrogen load reductions are planned to come from additional wastewater controls while about 74% is planned to come from the agriculture sector.



Chesapeake Bay Watershed Nitrogen Loads: 1985 – 2019



Chesapeake Bay Watershed Nitrogen Loads: 2019 – 2025





Key Agricultural Practices

According to the jurisdictions' Phase III WIPs, 60% of future nitrogen load reductions are planned to come from the following agricultural BMPs:

- Animal Waste Management Systems
- Nutrient Management Core Nitrogen
- Soil Conservation and Water Quality Plans
- Tillage Management (Continuous High-Residue)
- Forest Buffers
- Forest Buffers (Streamside with Exclusion Fencing)
- Grass Buffers
- Cover Crops (Traditional)



Key Agricultural Practices

“In general, recent research emphasizes the utility of input reductions over attempts to manage nutrient fate and transport at limiting nutrients in surface waters.”¹



¹ Ator SW, Blomquist JD, Webber JS, Chantat JG. Factors driving nutrient trends in streams of the Chesapeake Bay watershed. J. Environ. Qual. 2020;49:812–834. <https://doi.org/10.1002/jeq2.20101>



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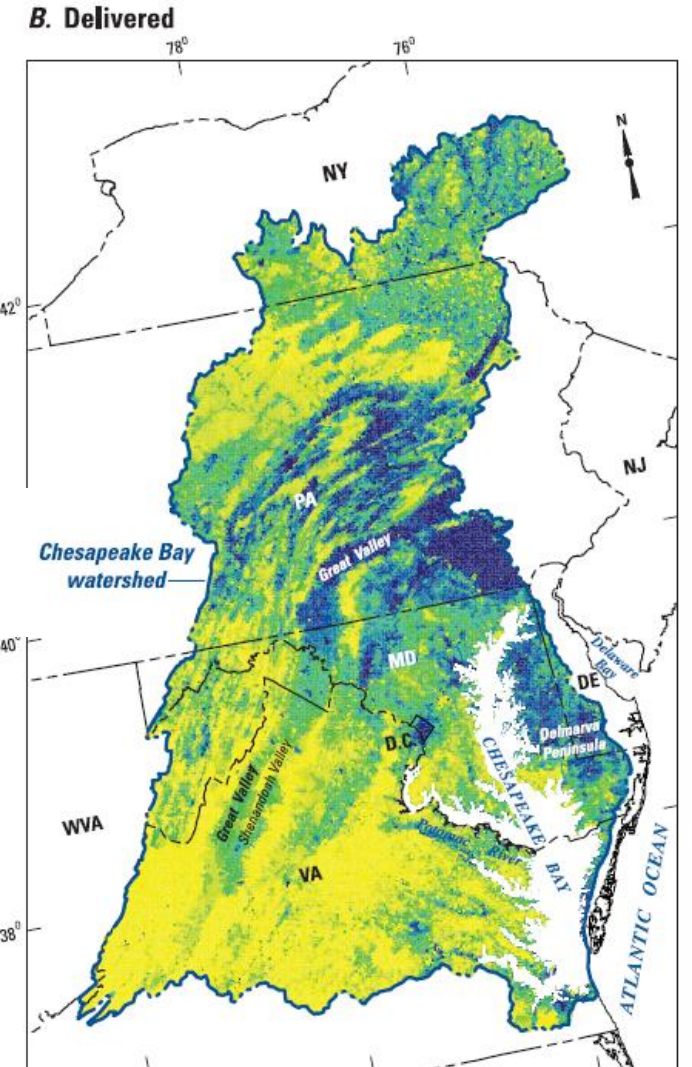
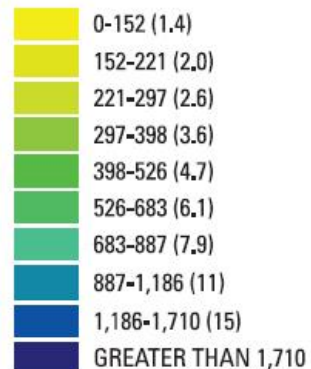


Key Agricultural Practices

- Among the key agricultural practices are those that are more effective at reducing excess nutrients and controlling erosion + are more cost-effective.

Estimated Annual Yield of Nitrogen

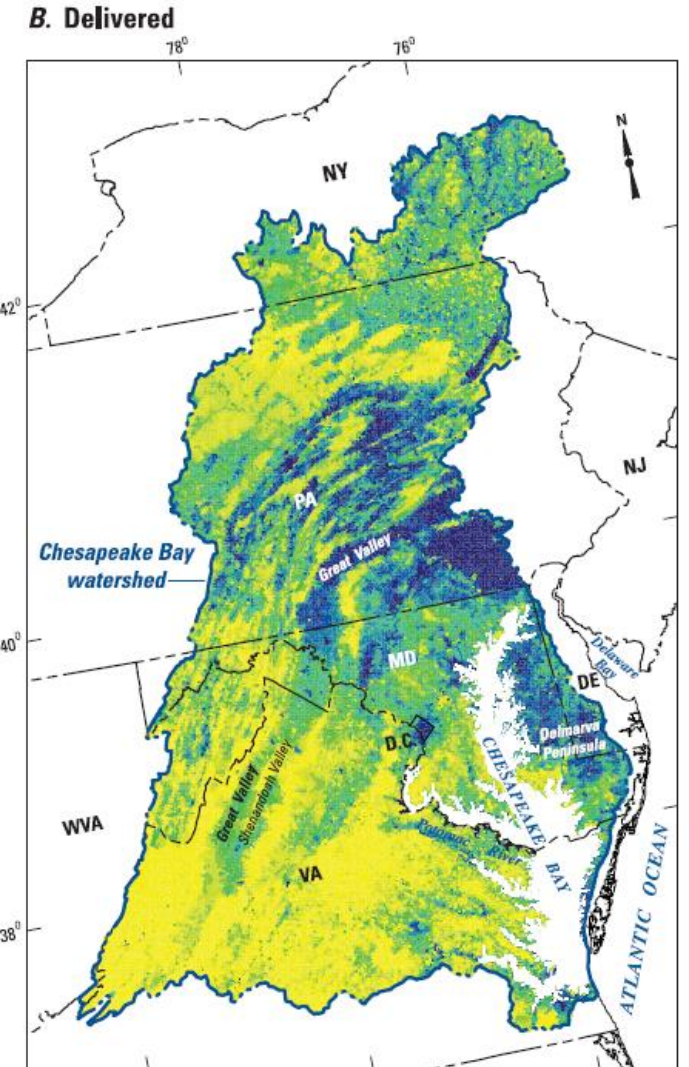
(high value in pounds per acre)





Key Agricultural Practices

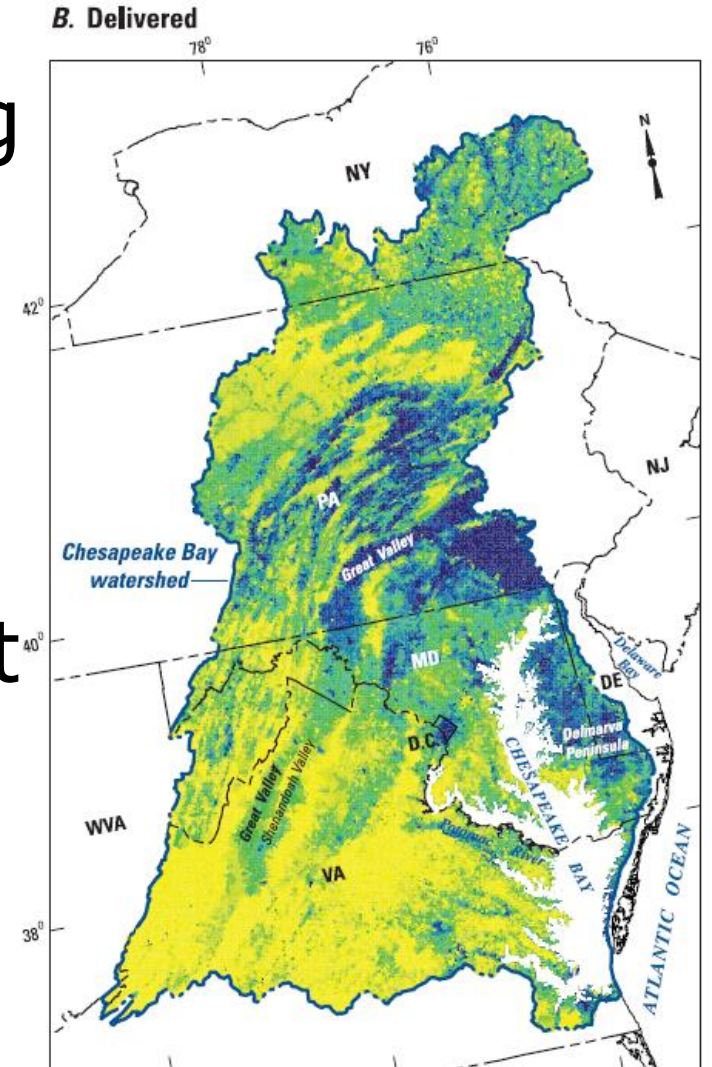
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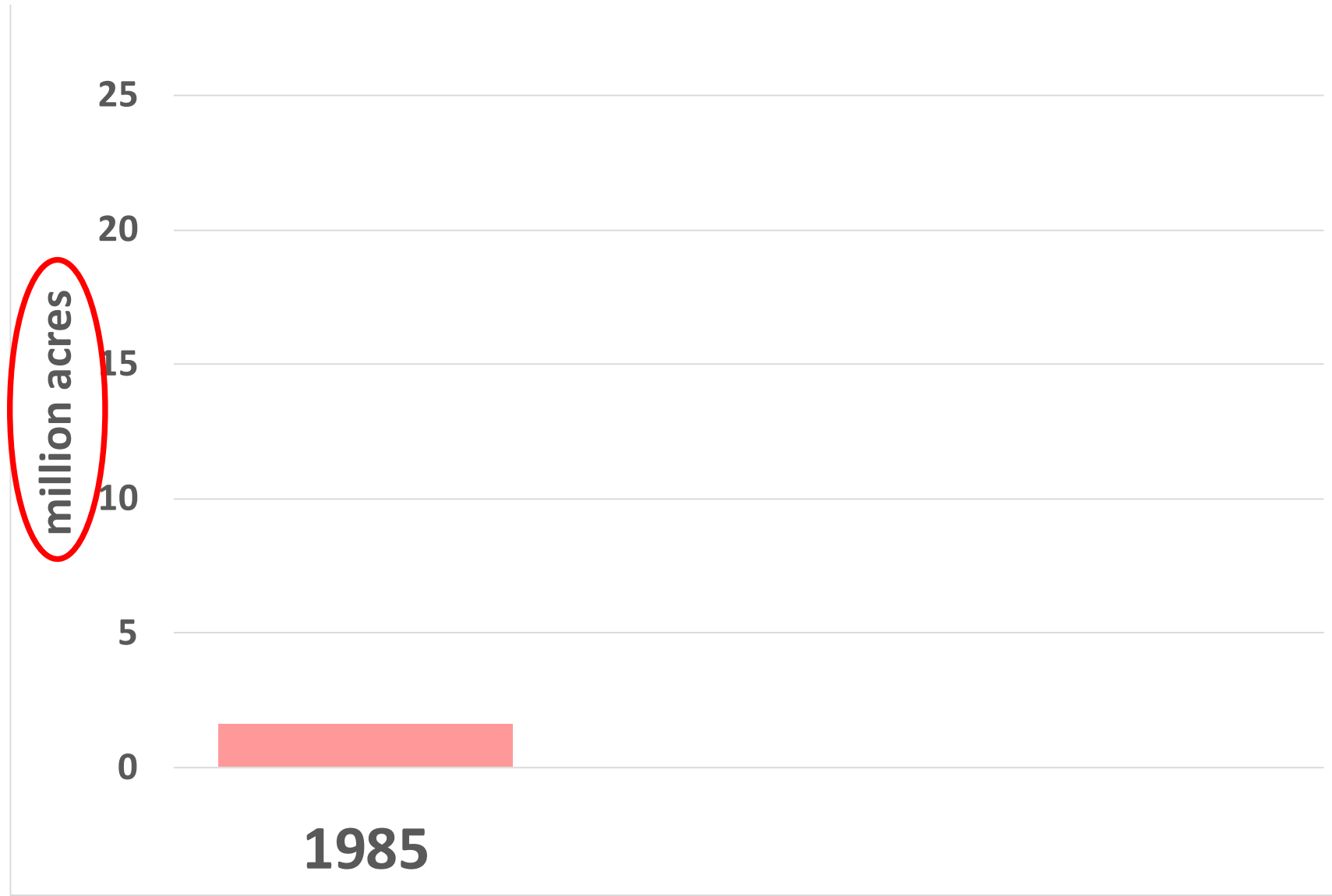
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- According to the states' Watershed Implementation Plans, BMPs are being directed at regions that have more effect on improving water quality conditions – not just for the estuary, but local water bodies.
- Technical Assistance is paramount.





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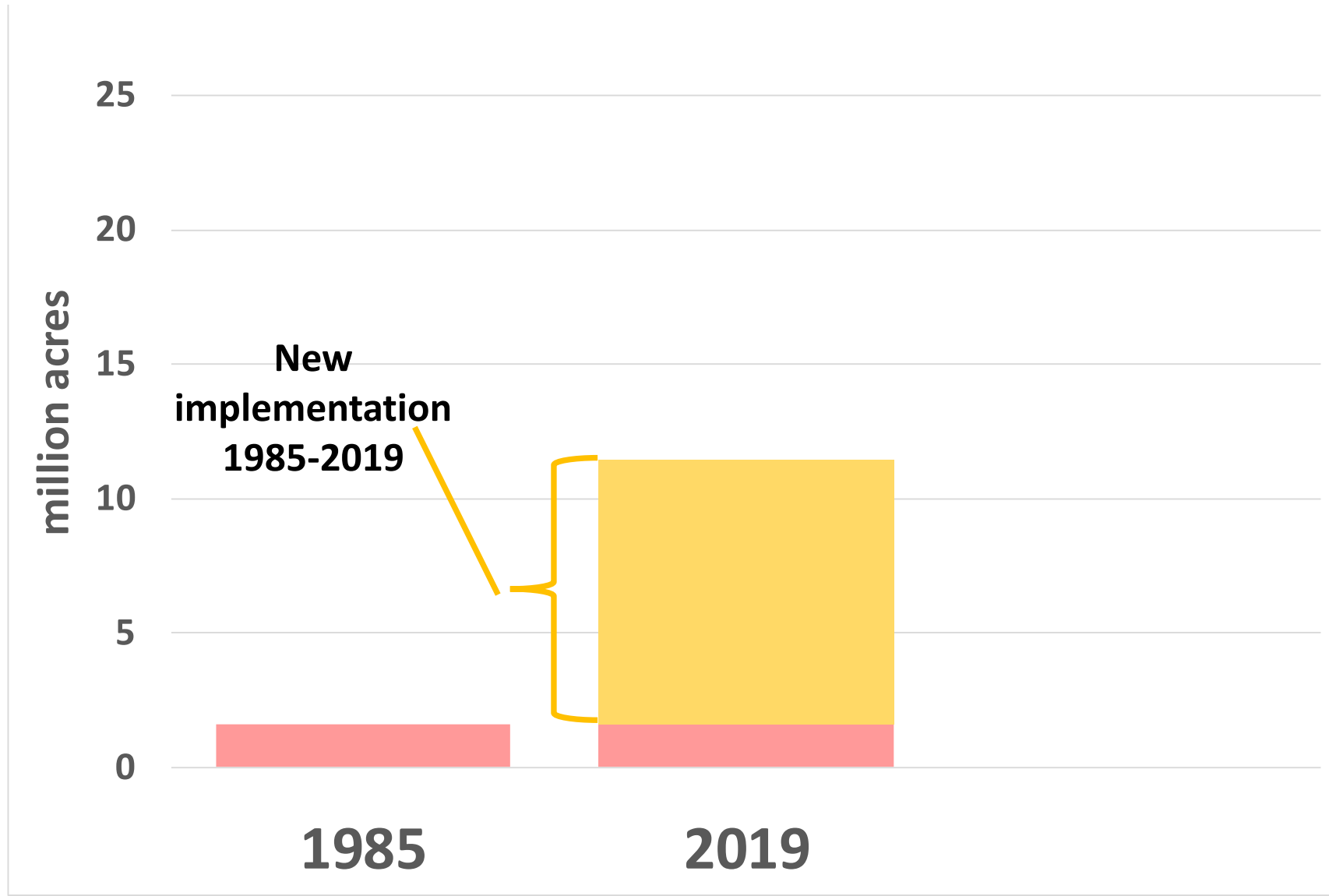
Acres of Agricultural BMP Implementation – Chesapeake Bay Watershed





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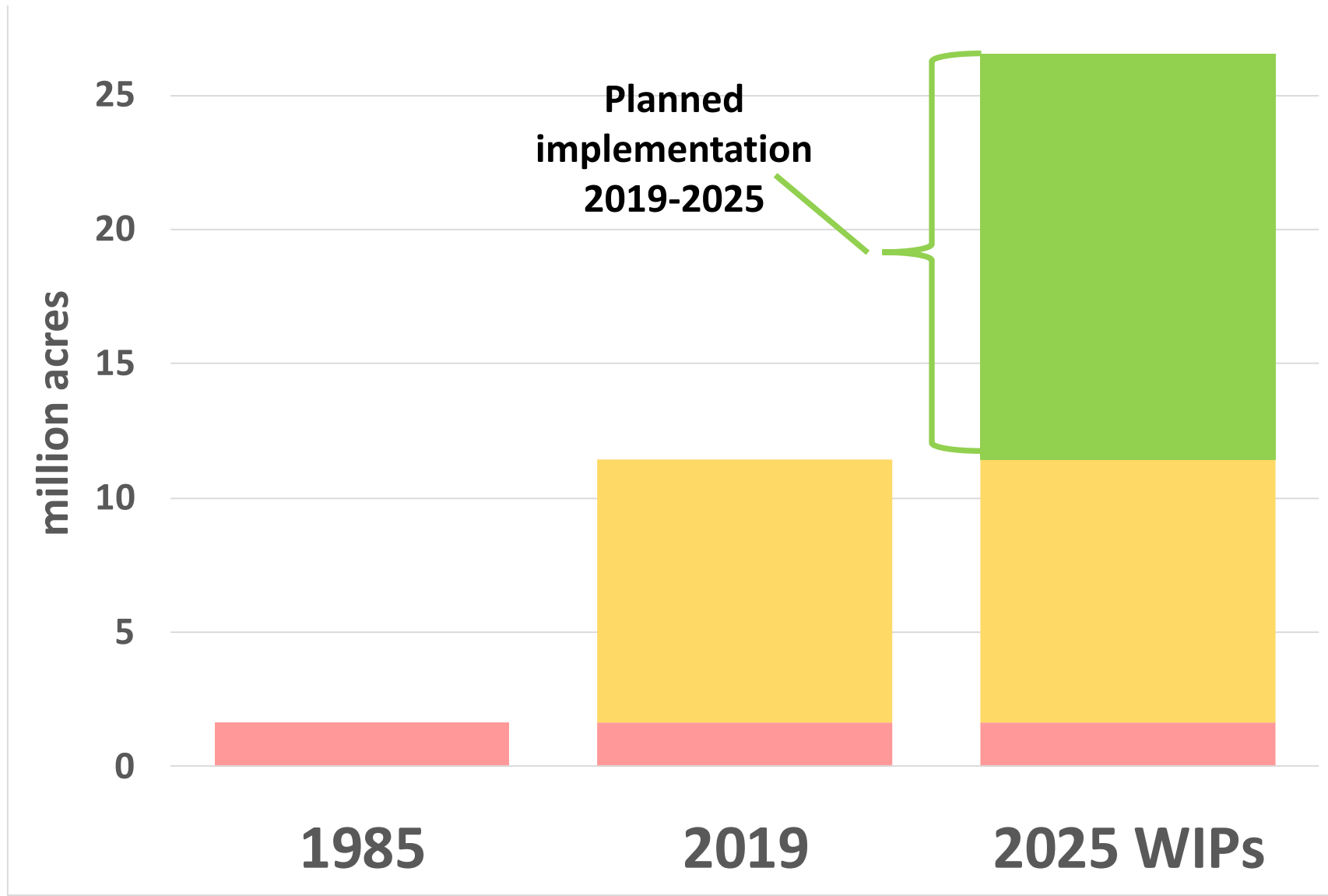
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Our History and Our Future Plans

Acres of Agricultural BMP Implementation – Chesapeake Bay Watershed





Agricultural Costs and Benefits

“Costs associated with nutrient and sediment reductions required under the TMDL in the agricultural sector alone have been estimated at US \$3.6 billion between 2011 and 2025 and \$900 million, annually, in later years.”²



² Birch, M. B. L., Gramig, B. M., Moomaw, W. R., Doering, III, O. C., & Reeling, C. J. (2011). *Why metrics matter: Evaluating policy choices for reactive nitrogen in the Chesapeake Bay watershed*. Environmental Science & Technology, 45, 168–174. <https://doi.org/10.1021/es101472z>



Agricultural Costs and Benefits

The market value of agricultural products sold = \$16 billion³

- PA – 43% of \$16 billion; top 3 = dairy products, milk; cattle and calves; miscellaneous crops
- MD – 15%; top 3 = broilers; miscellaneous crops; corn
- VA – 19%; top 3 = broilers; miscellaneous crops; cattle and calves
- NY+DE+WV – 23% of \$16 billion

³ U.S. Department of Agriculture Economic Research Service, state cash receipts, all commodities, 2017 Nominal (current dollars)



State Phase 3 WIP Agricultural Strategies

- Protect what we have – forests, wetlands, productive agricultural lands
 - Economies that are natural resource-based contribute \$10's of billions to state economies annually
 - + Ecosystem service benefits
- Maintain what we have – inspection and maintenance programs
- Curtail new pollution
 - Increased agricultural animal populations
 - Increased acres of higher-loading crop types





State Phase 3 WIP Agricultural Strategies

- Retain, leverage, expand full federal funding
 - Farm Bill
 - USDA's Natural Resources Conservation Service's (NRCS) Environmental Quality Incentive Program (EQIP)
 - Farm Service Agency's (FSA) Conservation Reserve Enhancement Program (CREP) – forest and grass buffers, wetland restoration, treating Highly Erodible Land acres
 - EPA's Clean Water State Revolving Fund, Section 319 Nonpoint Source Management Program
 - EPA Chesapeake Bay Program, i.e., funding streams for the most cost-effective practices in effective regions



State Phase 3 WIP Agricultural Strategies

- State financial incentive programs – cost-share programs
 - BMPs that align with not only water quality goals but also the operations' management and sustainability
 - Promote practices that improve the health, yield and profitability of soils
- Public-private partnerships – agribusiness; non-governmental organizations
- Voluntary locally-led conservation





State Phase 3 WIP Agricultural Strategies

- Effective regulations that are enforced
 - State requirements for agricultural nutrient/manure management plans, erosion and sediment control
- Technical assistance – Conservation Districts, NRCS, other conservation partners evaluate and recommend solutions to address resource concerns on working lands





State Phase 3 WIP Agricultural Strategies

- Technical assistance (cont.)
 - “Reliance on accessible, high quality technical assistance professionals is an essential component of successful modern-day, environmentally-sound farming” . . . “participants in the CBFN assessment estimated that the number of on-the ground technical service professionals needs to increase by 30 percent to meet current demand.”⁴
- Nutrient credit trading

⁴ Chesapeake Bay Commission (2017). *Boots On The Ground – Improving Technical Assistance for Farmers*. <https://www.chesbay.us/library/public/documents/Policy-Reports/CBC-TA-Report-Boots-on-the-Ground.pdf>



State Phase 3 WIP Agricultural Strategies

- Agricultural Certainty Programs
 - Allow farmers to make long-term commitments and business decisions necessary in planning for the future = assurance of regulatory predictability
- Innovative technologies for animal waste management – generate energy from animal manure, reduce on-farm waste streams, repurpose manure by creating fertilizer and other products and by-products that are marketable





The Bottom Lines

- The level of effort planned for the agriculture sector is unprecedented.
- We should not count on “silver bullets”. It’s a complicated problem because it’s a complicated ecosystem.
- Of greatest importance are farming methods that achieve ecosystem restoration and sustain our economies



Our Vision: An environmentally and economically sustainable Chesapeake Bay watershed with clean water, abundant life, conserved lands and access to the water, a vibrant cultural heritage, and a diversity of engaged citizens and stakeholders.

