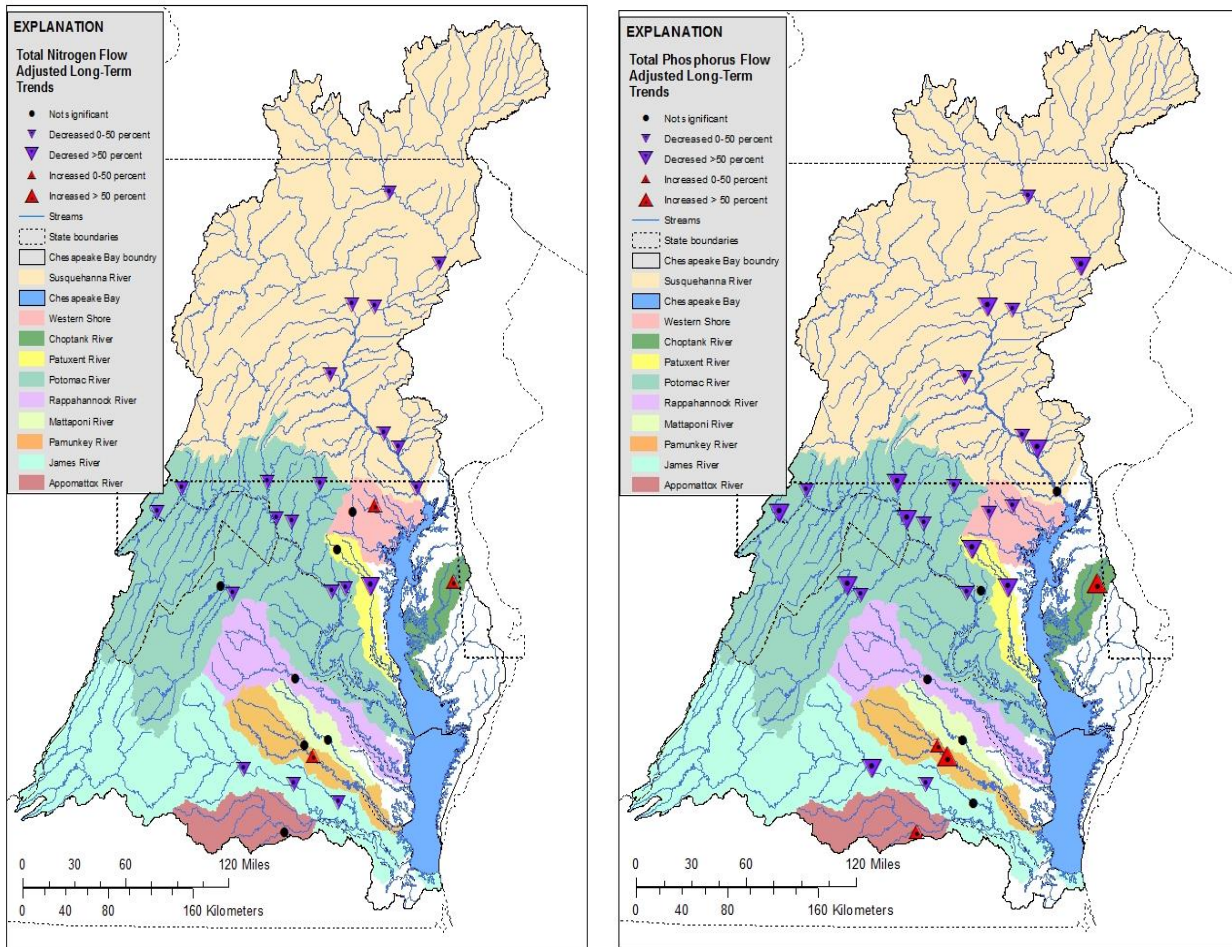


Halfway to 2017: Status of the Chesapeake Bay TMDL

September 20, 2013 Chesapeake Bay Commission Meeting
Advanced Briefing Paper/Presentation

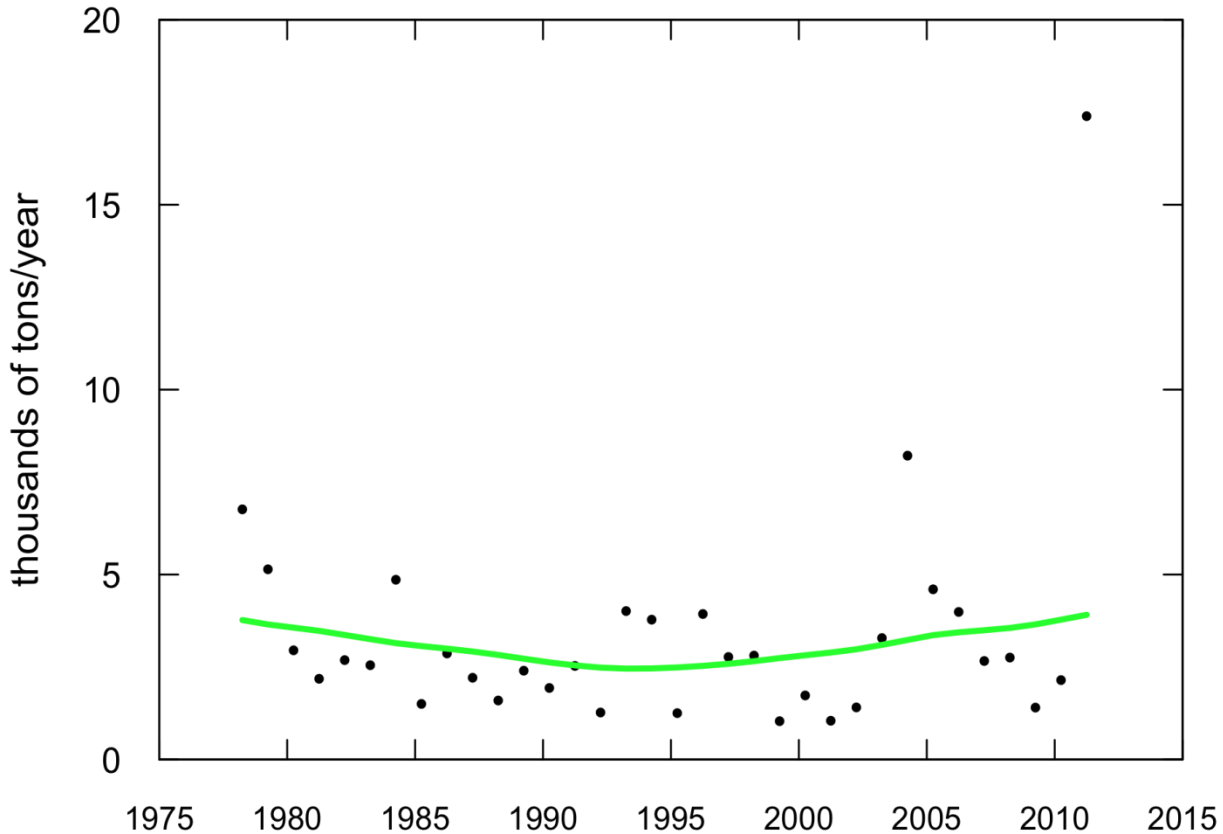
Achieving Clean Water: How far have we come?



There are Clear Indications We are Making Progress...

- We are not only holding our own in the face of significant continued population growth and development in the watershed (almost a 5 million population increase since 1980), we are making progress
 - Most of our long term water quality monitoring stations throughout the watershed are showing positive, downtrends in nutrient pollution concentrations illustrated above for nitrogen (left side) and phosphorus (right side)
- We are seeing more and more signs that parts of the Bay ecosystem are responding to our collective efforts
 - From the large tidal Potomac River to smaller Gunston Cove on the Virginia shoreline up north to the Susquehanna Flats and down the Bay to the Lynnhaven River—water quality and biological communities are returning to much healthier levels

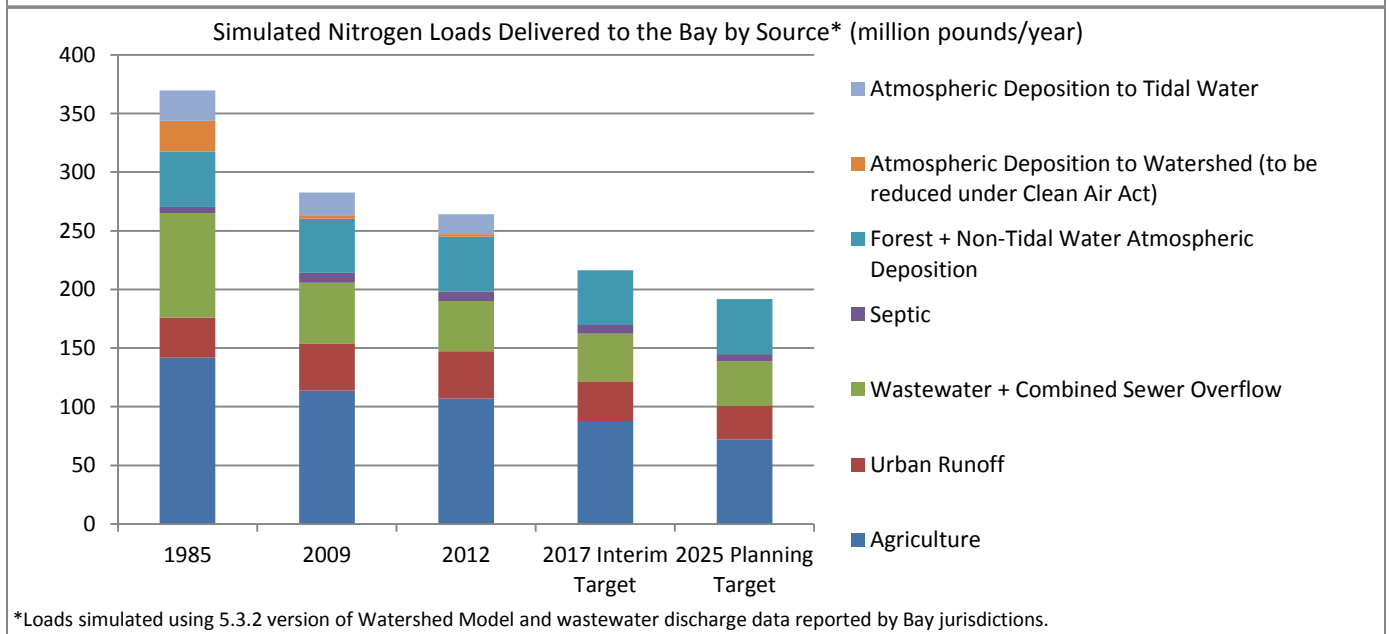
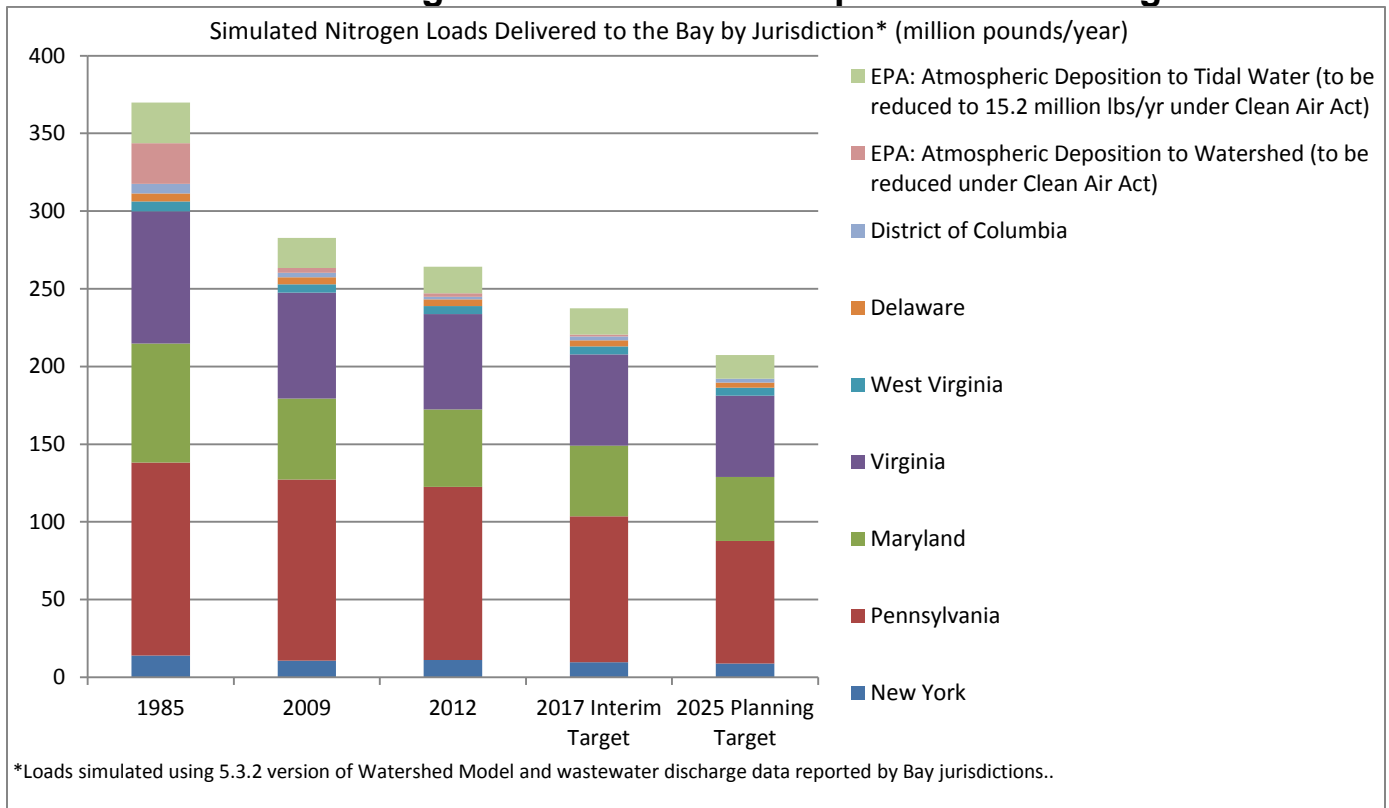
**Susquehanna River at Conowingo, MD Total Phosphorus
Water Year
Flux Estimates (dots) & Flow Normalized Flux (line)**



...But Other Trends Reveal the Challenges Before Us

- The same water quality monitoring networks are also showing us that changes to our watershed are dampening the positive effects of our past progress
 - An example illustrated above, with long term positive downward trends in phosphorus pollutant loads from the Susquehanna River watershed being reversed since the mid-1990s
- Pollutant load reduction progress in some of our source sectors—wastewater treatment plant upgrades, agricultural lands—is not being matched in other source sectors—urban stormwater runoff, septic systems—where pollutant loads are still growing along with the population and development of the watershed
- And we are now facing an immediate future with higher tides, warmer temperatures, and more severe weather patterns
 - Example: eelgrass beds in Virginia’s portion of the Bay have experienced very high summer-time temperatures which has resulted in massive die-offs in recent years

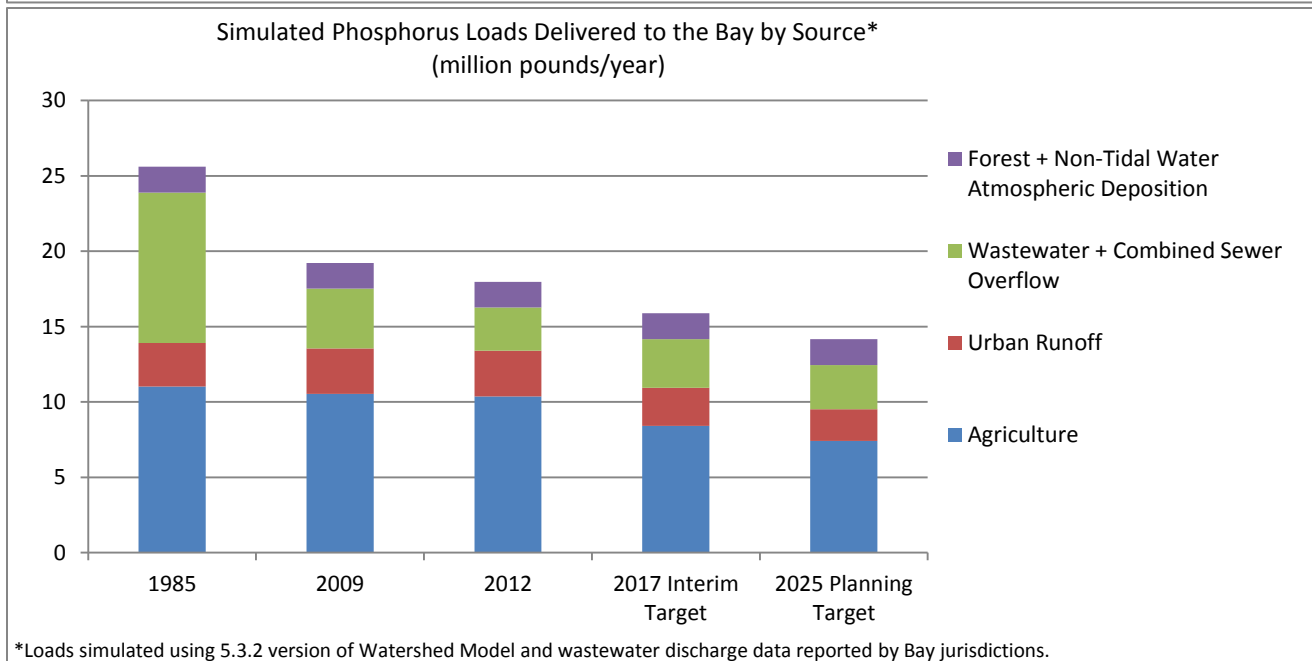
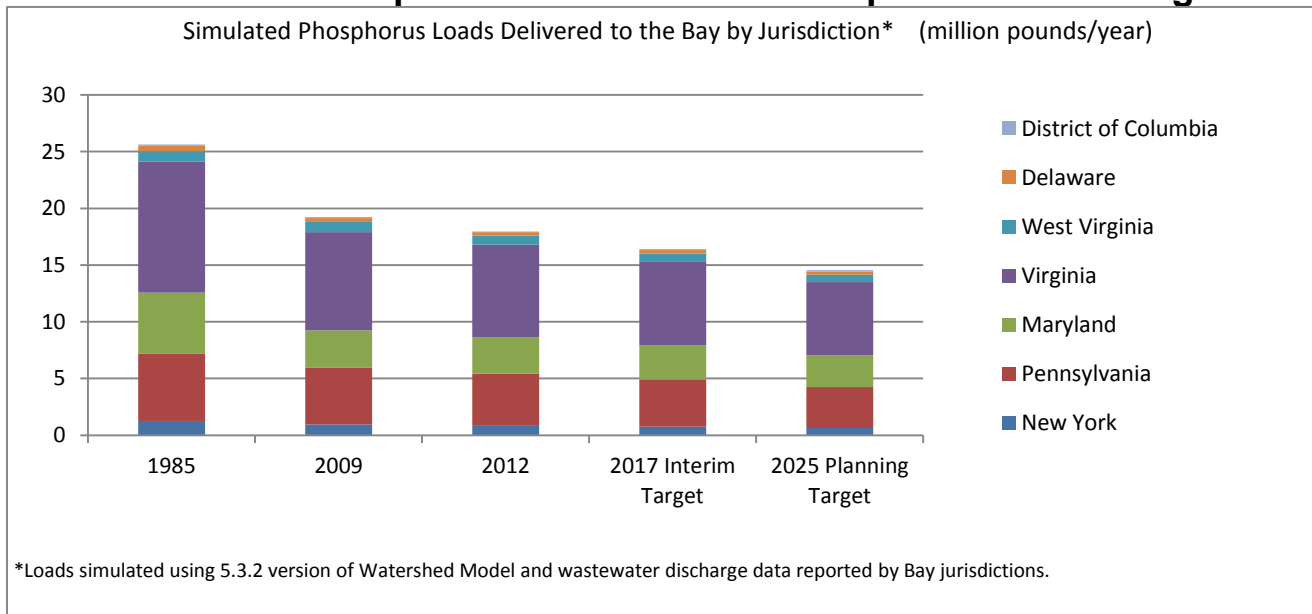
Basinwide Nitrogen Load Reduction Implementation Progress



Significant Progress Tempered by Reductions Still Required

- Significant load reduction progress since 1985 attributable to upgrades in wastewater treatment, reductions in nitrogen air emissions, and implementation of agricultural conservation practices.
- All jurisdictions have achieved (DC, DE, MD, NY, VA, WV) or are on track to achieve (PA) their 2012-2013 nitrogen load reduction milestones.
- However, five of the watershed's jurisdictions will need to increase their rate of implementation in specific source sectors order to achieve their nitrogen 2017 interim targets and, ultimately, their 2025 TMDL allocations: DE (agriculture), MD (agriculture, urban runoff), NY (wastewater), PA (agriculture, wastewater, urban runoff), and VA (agriculture, urban runoff).

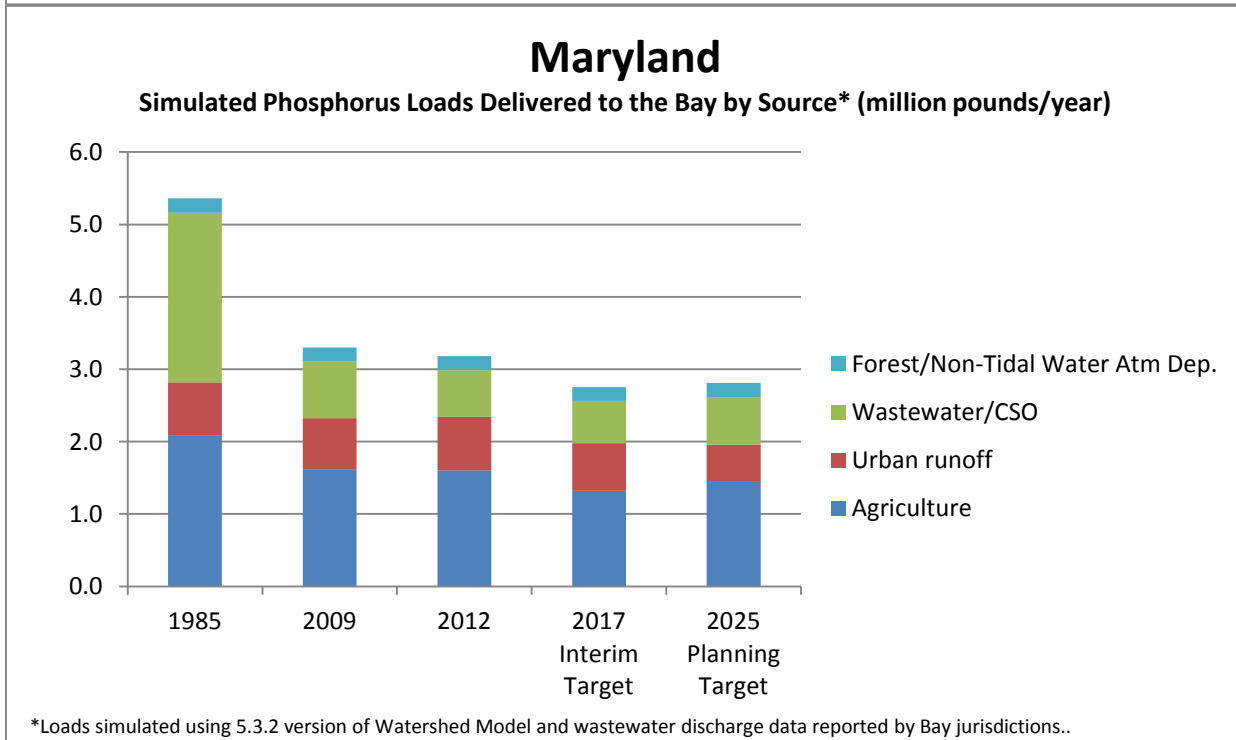
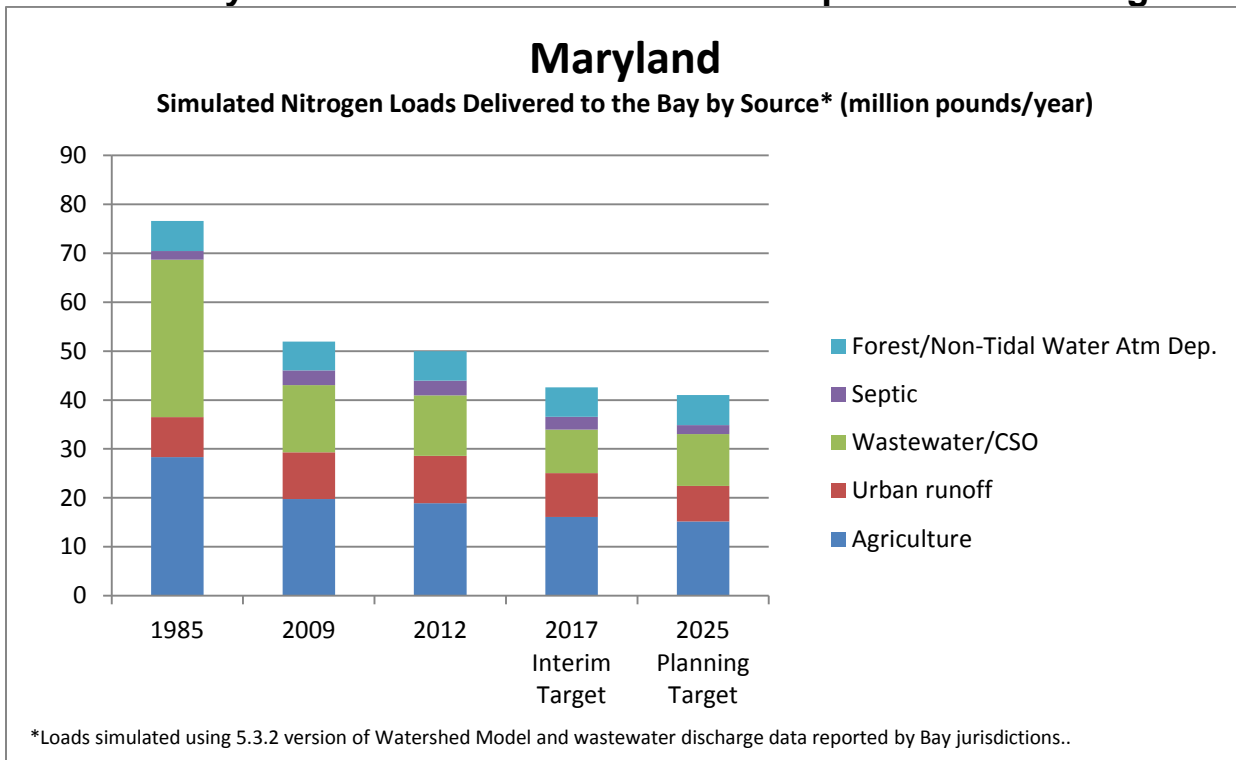
Basinwide Phosphorus Load Reduction Implementation Progress



Wastewater Has Led the Way for Decades—More Needed from Ag, Urban in Less Time

- The vast majority of the significant phosphorus load reduction progress since 1985 is attributable to upgrades in wastewater treatment building on phosphate detergent bans, followed by the implementation of agricultural conservation practices.
- All jurisdictions have achieved (NY, PA, WV) or are on track to achieve (DC, DE, MD, VA) their 2012-2013 phosphorus load reduction milestones.
- Four of the watershed's jurisdictions will need to increase their rate of implementation in specific source sectors in order to achieve their phosphorus 2017 interim targets and, ultimately, their 2025 TMDL allocations: MD (agriculture, urban runoff), NY (wastewater), PA (agriculture, wastewater, urban runoff), and VA (agriculture, urban runoff),

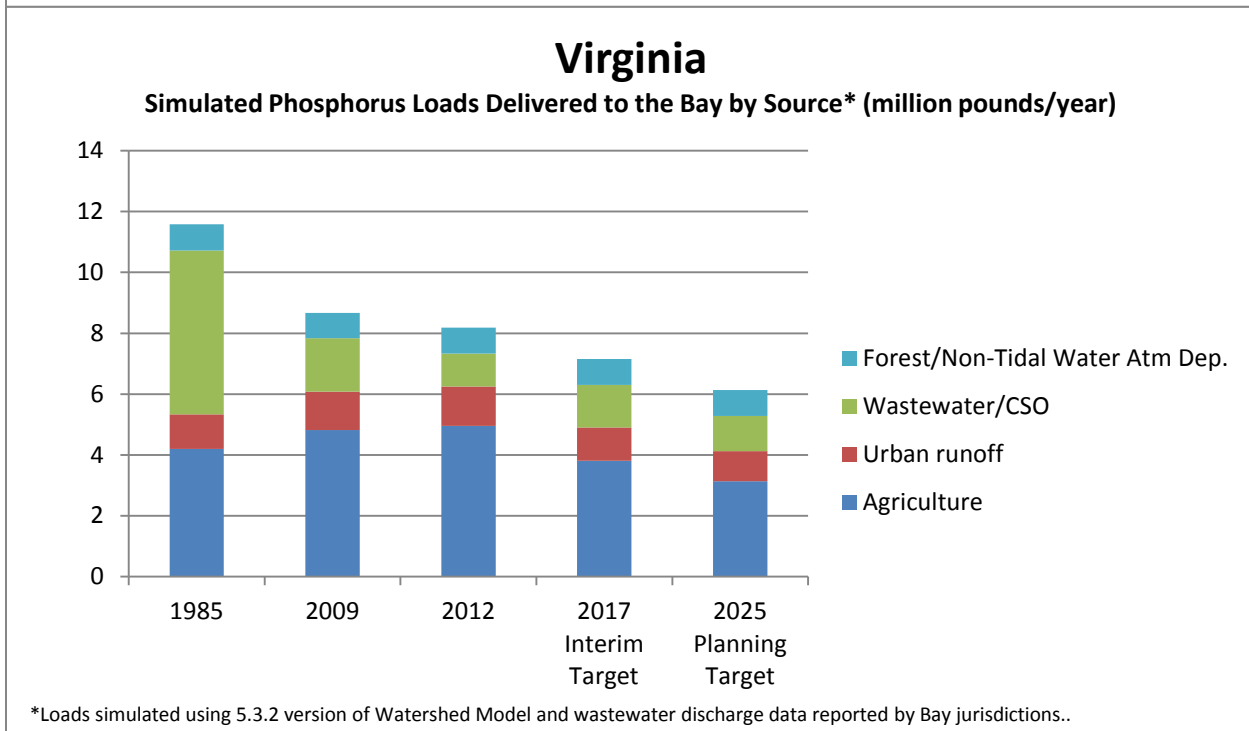
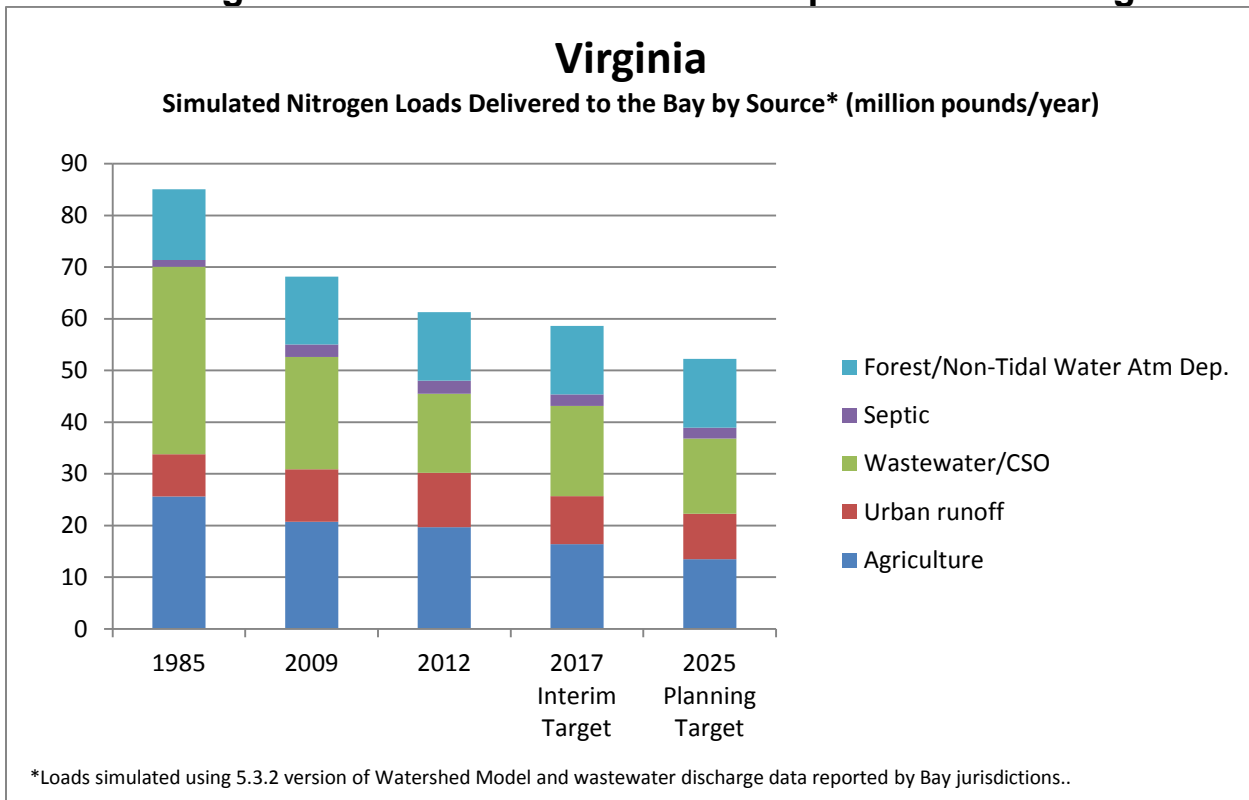
Maryland Nutrient Load Reduction Implementation Progress



Significant Progress to Date—Higher Implementation Rates Needed for 2017/2025

- Maryland has achieved its nitrogen milestone and is on track to achieve its phosphorus 2012-2013 milestone after having made significant load reductions in the wastewater and agricultural sectors since 1985.
- Maryland will need to increase its rate of implementation of agricultural conservation practices and urban stormwater runoff reduction and retention actions to keep on track for achieving its 2017 interim target and 2025 Bay TMDL allocation.

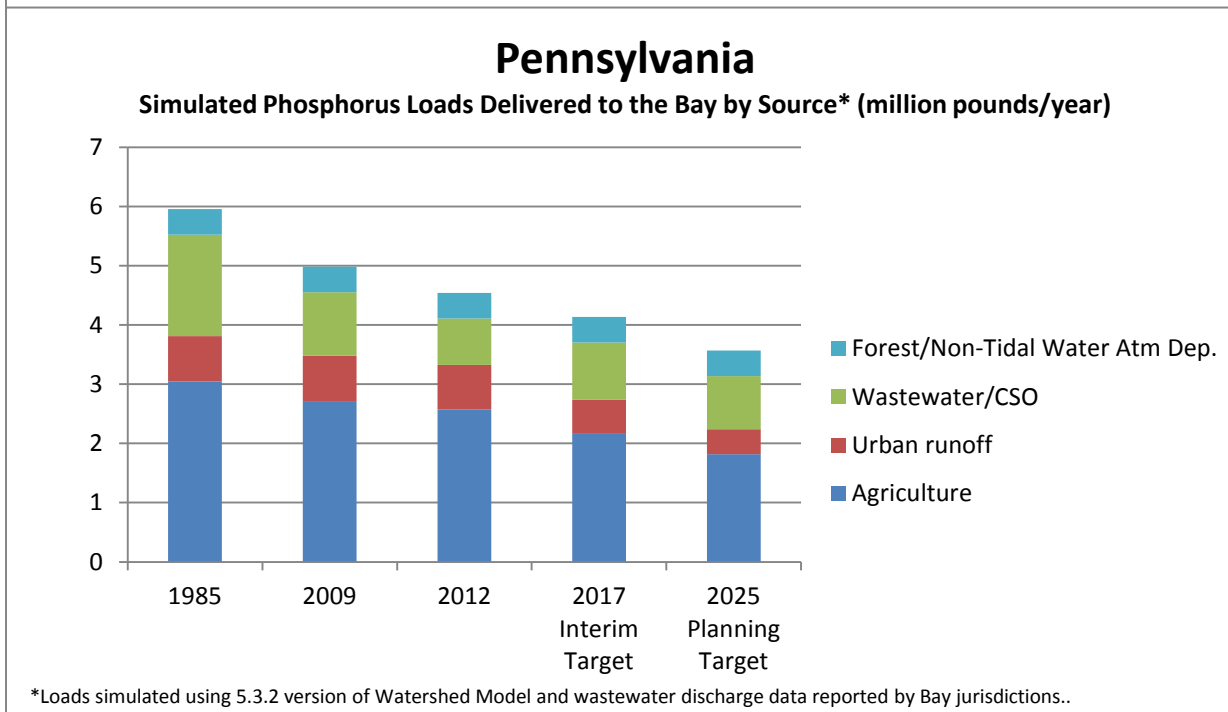
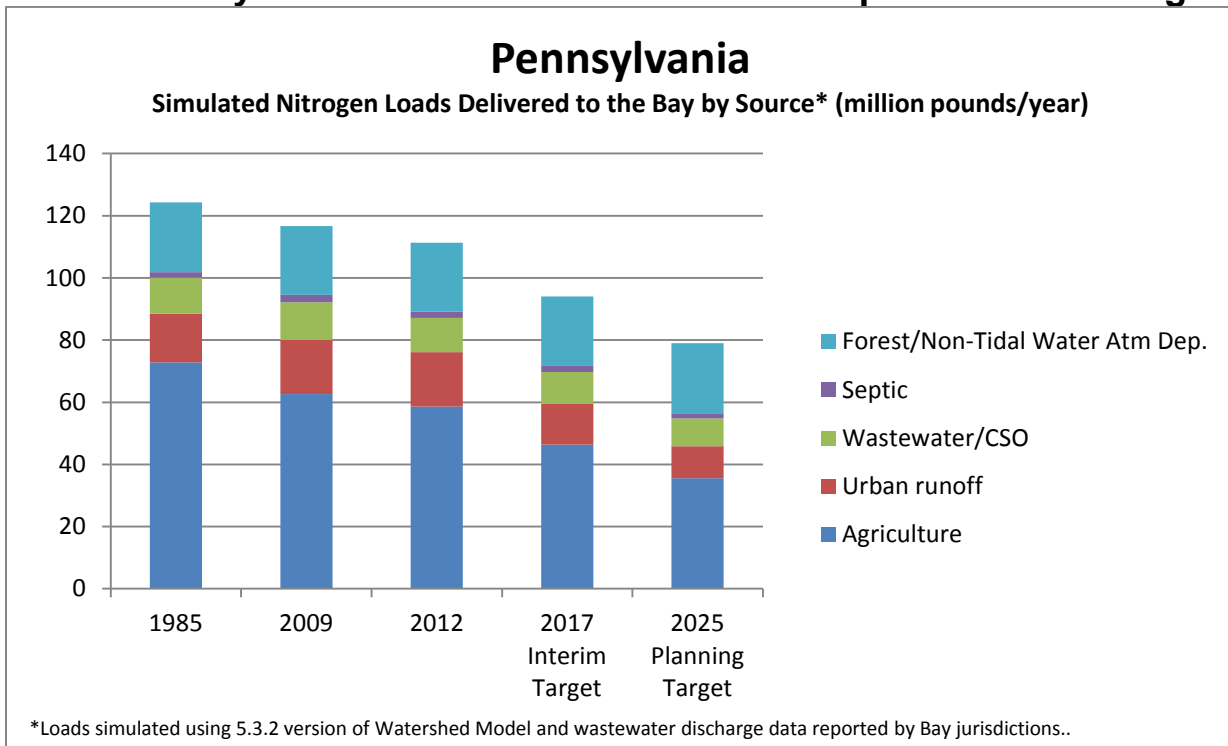
Virginia Nutrient Load Reduction Implementation Progress



Must Achieve Similar N Reduction in Ag Loads Achieved in Past 27 Years in Next 12 Years

- Virginia has achieved its nitrogen and is on track for achieving its phosphorus 2012-2013 milestones largely due to overachievement of its wastewater sector milestone.
- However, to achieve its 2017 interim targets and ultimately reach its 2025 TMDL allocations, Virginia must significantly increase its rate of agricultural conservation practice and urban runoff retention and reduction actions in the coming 12 years.

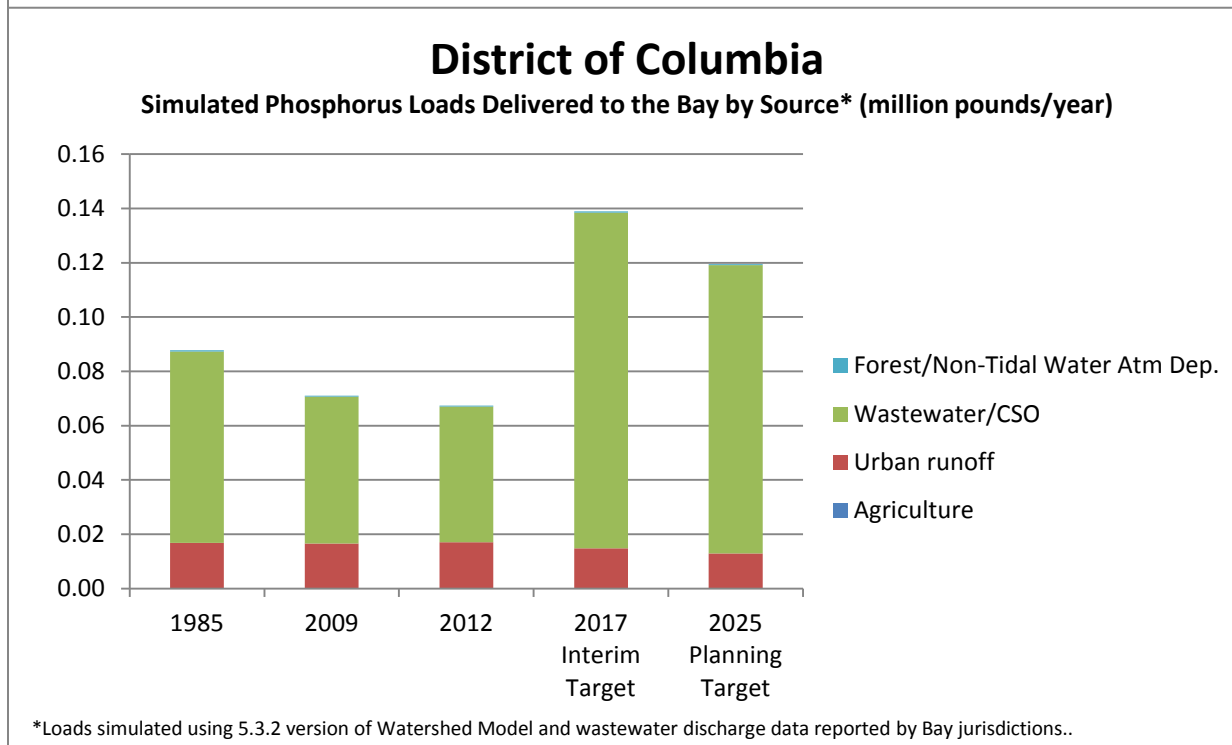
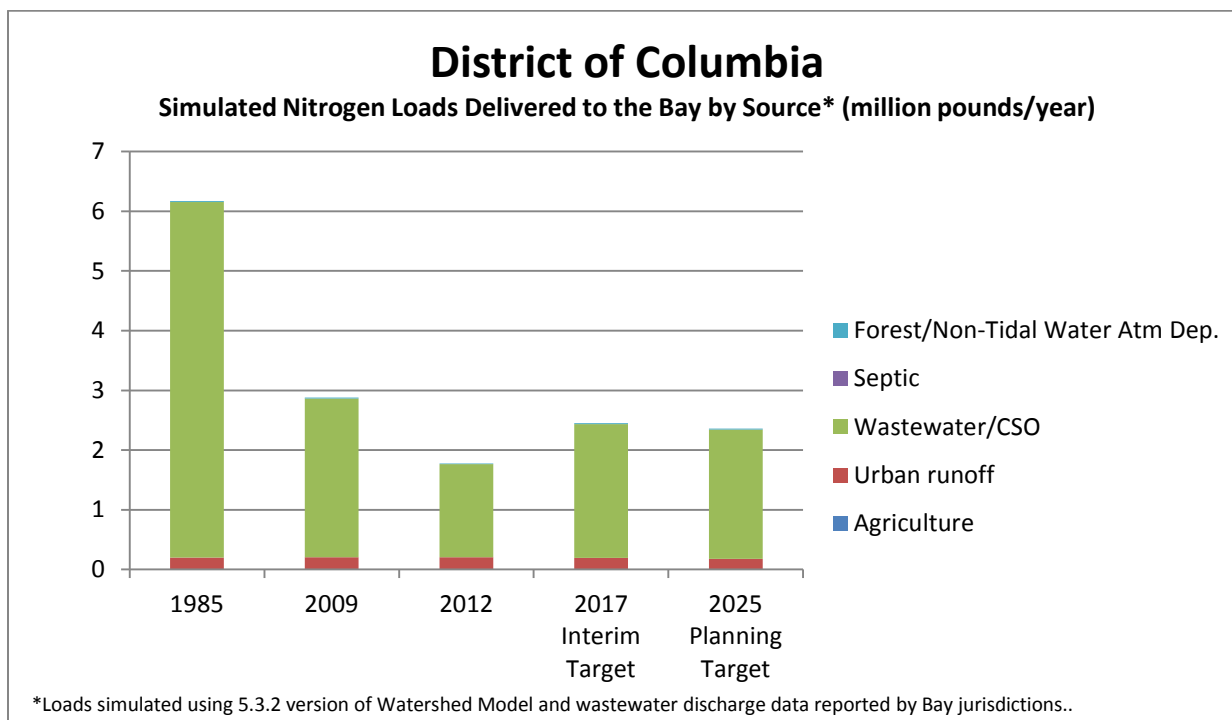
Pennsylvania Nutrient Load Reduction Implementation Progress



Equal or Larger Reductions Needed in Coming 12 Years Than Accomplished Since 1985

- Although Pennsylvania surpassed their phosphorus and is on track for achieving their nitrogen 2012-2013 milestones, the jurisdiction is not on track to achieve their 2017 and 2025 at past or present rates of implementation.
- In the coming 12 years, Pennsylvania needs to match (phosphorus) and greatly expand (nitrogen) the pollutant load reductions accomplished over the past 28 years by its agricultural community and further reduce its wastewater and urban runoff loads in order to meet its clean water obligations.

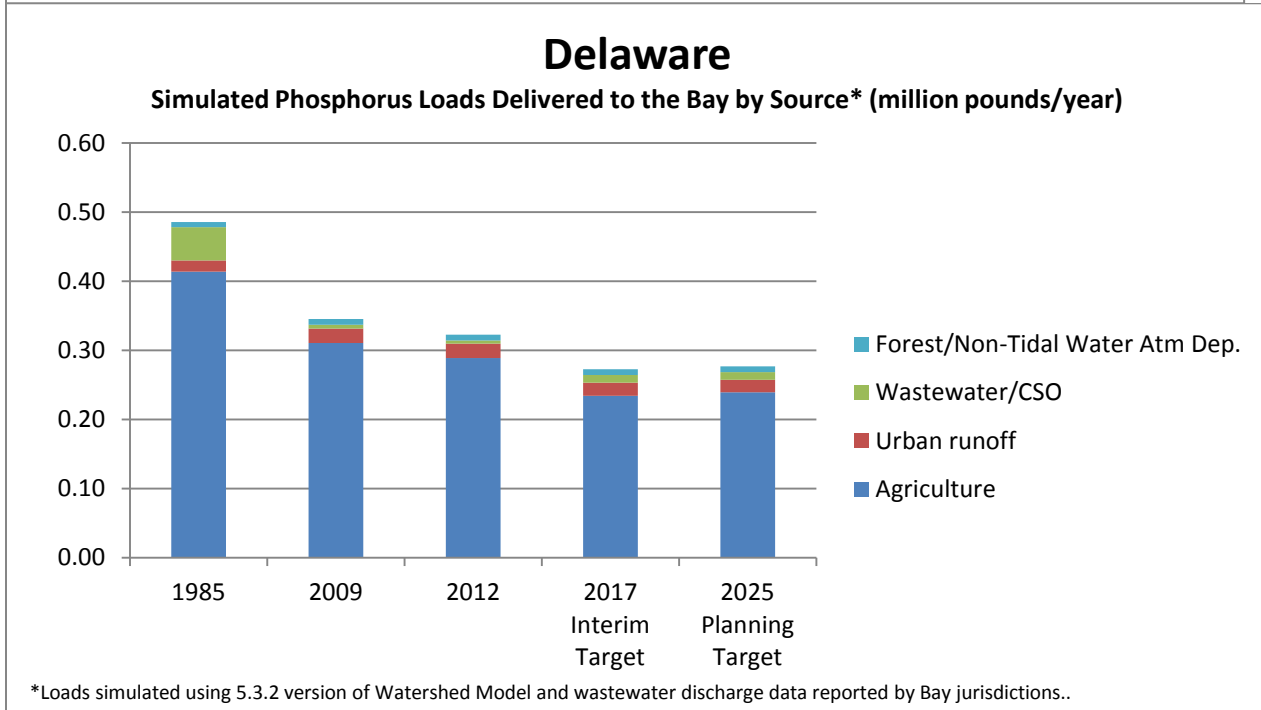
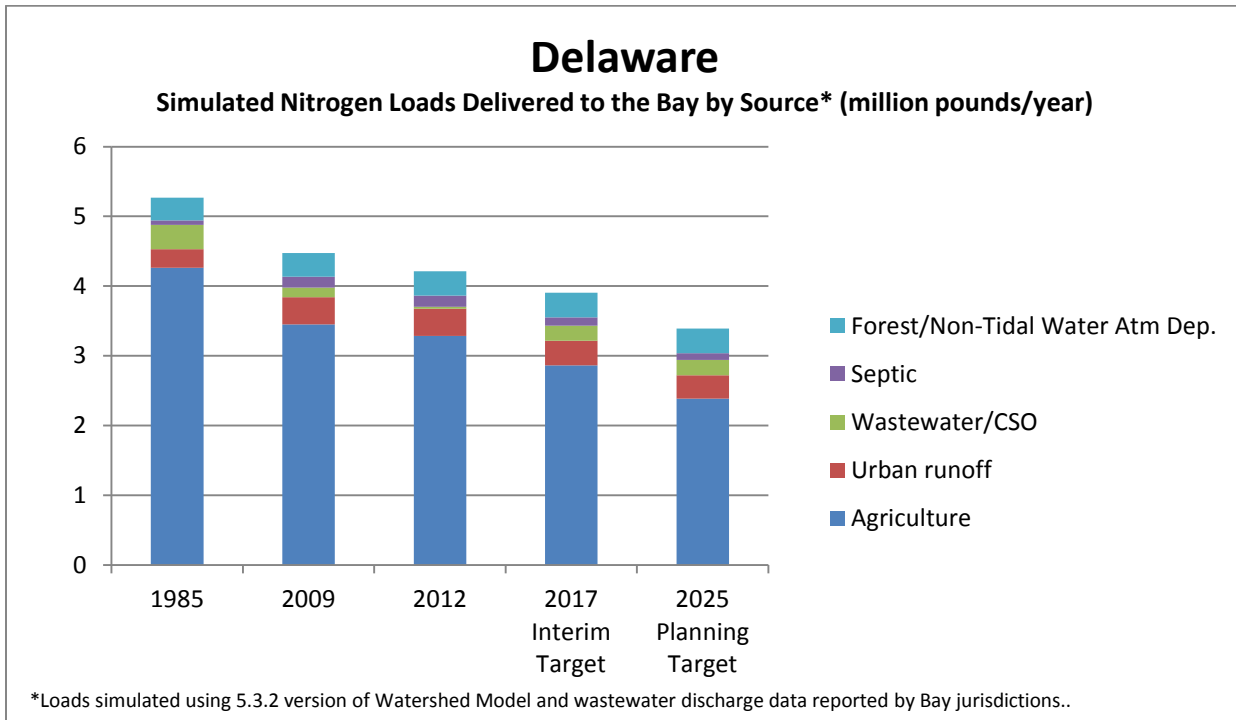
District of Columbia Nutrient Load Reduction Implementation Progress



Reductions at Blue Plains Dominate District's Progress

- Significant reductions in nitrogen loads due to systematic upgrades in treatment technologies at the Blue Plains facility has enabled early achievement of the District's 2012-2013 milestones.
- The current estimated loads so much lower than the 2017 and 2025 values because current loads (e.g., 2012) are based on measured discharged wastewater flows and 2017 and 2025 are based on the design flow capacity of the Blue Plains facility.
- Also, the District has made significant process in reducing the amount of infiltration into the sewer system, thus further reducing the measured discharged flows from Blue Plains in recent years.

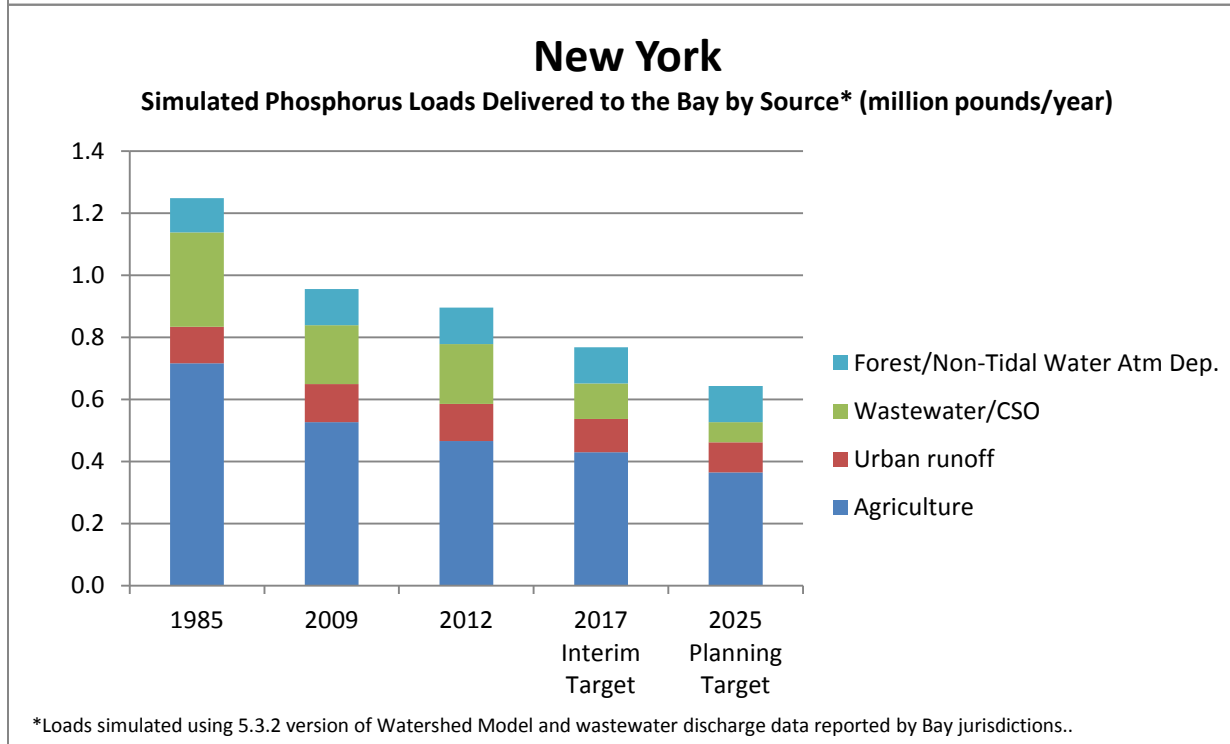
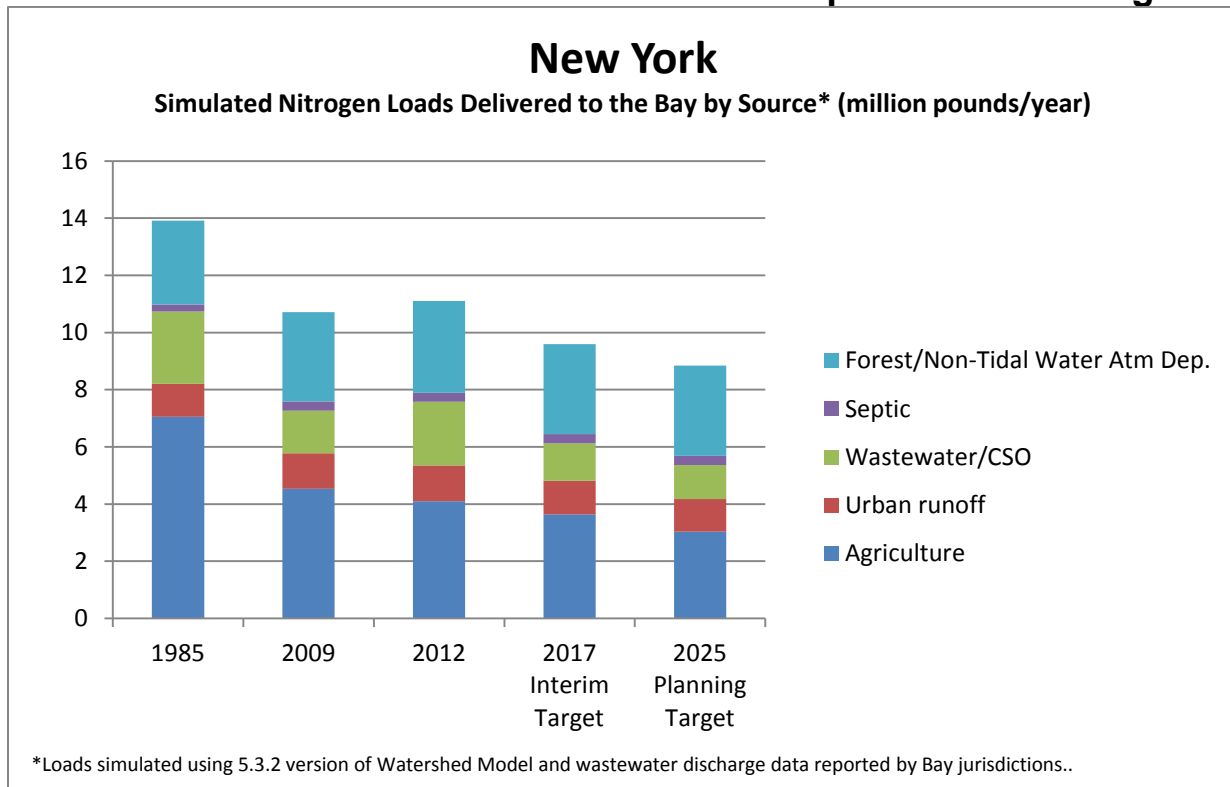
Delaware Nutrient Load Reduction Implementation Progress



Continued Solid Progress Dependent on Increased Rate of Ag Practice Implementation

- Delaware has achieved its nitrogen milestone and is on track to achieve its 2012-2013 milestone for phosphorus.
- These significant reductions in nitrogen and phosphorus to date were due to implementation of agricultural conservation practices and upgrades to Delaware’s local wastewater treatment plants.
- However, Delaware needs to increase the implementation rate of its agricultural conservation practices in order to get on track for meeting its nitrogen 2017 interim target and 2025 Bay TMDL allocation.

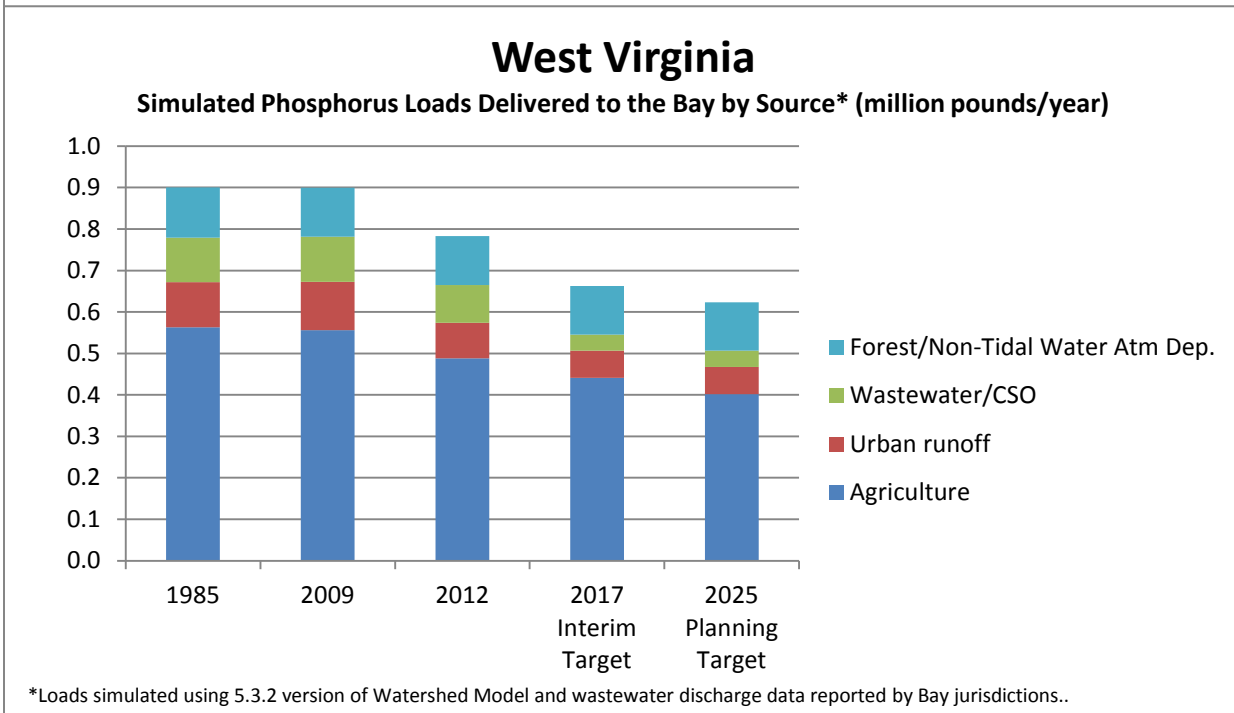
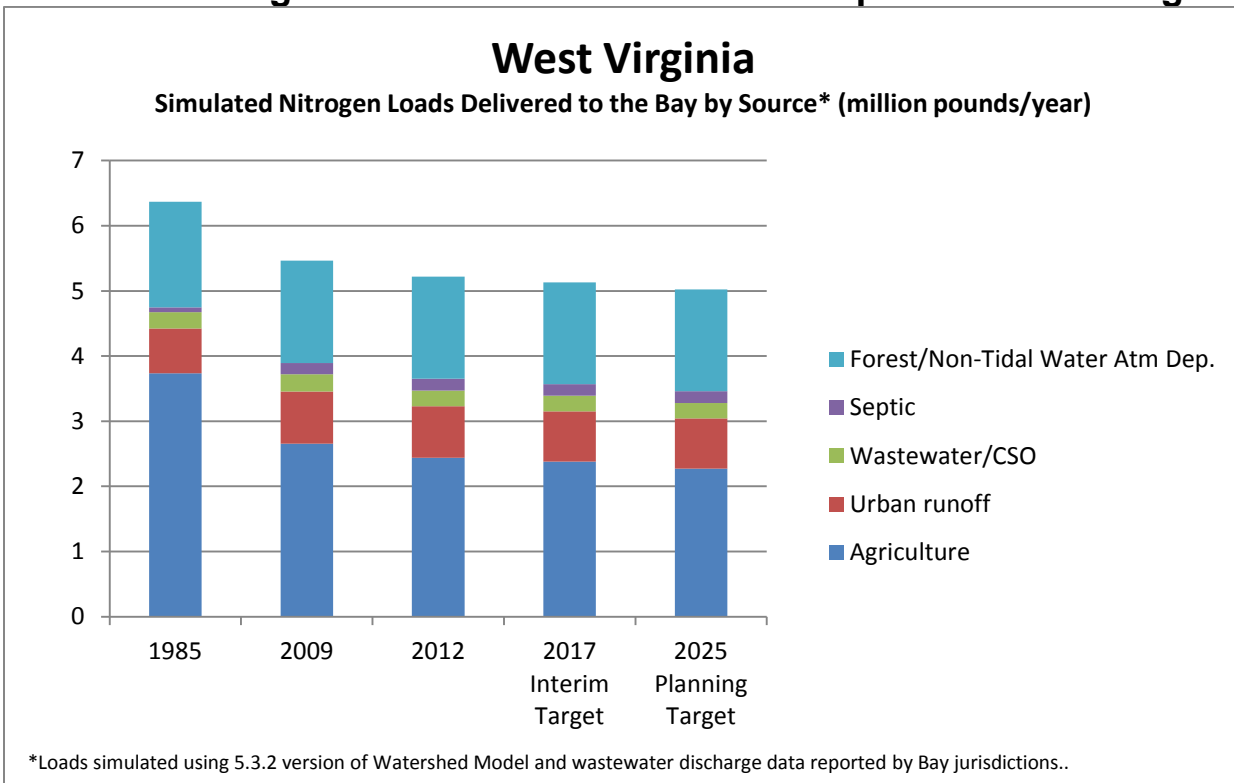
New York Nutrient Load Reduction Implementation Progress



Wastewater Upgrades Needed to Compliment Significant Progress by Ag Community

- Progress since 1985 has been primarily due to implementation of agricultural conservation practices, with some limited contributions from wastewater treatment facility upgrades, leading to New York’s achievement of its 2012-2013 nutrient reduction milestones a year early.
- The agricultural sectors looks to be on track to help achieve its part, but significant upgrades in wastewater treatment will need to be made to achieve the statewide nitrogen and phosphorus 2017 targets and 2025 Bay TMDL allocations.

West Virginia Nutrient Load Reduction Implementation Progress



On Track to Achieve 2017 Interim Targets and 2025 TMDL Allocations

- West Virginia has already achieved its 2012-2013 for both nitrogen and phosphorus.
- West Virginia is on track, across its three major source sectors—agriculture, wastewater, and urban runoff—to achieve its interim 2017 target and its 2025 TMDL allocation given past and recent implementation rates.