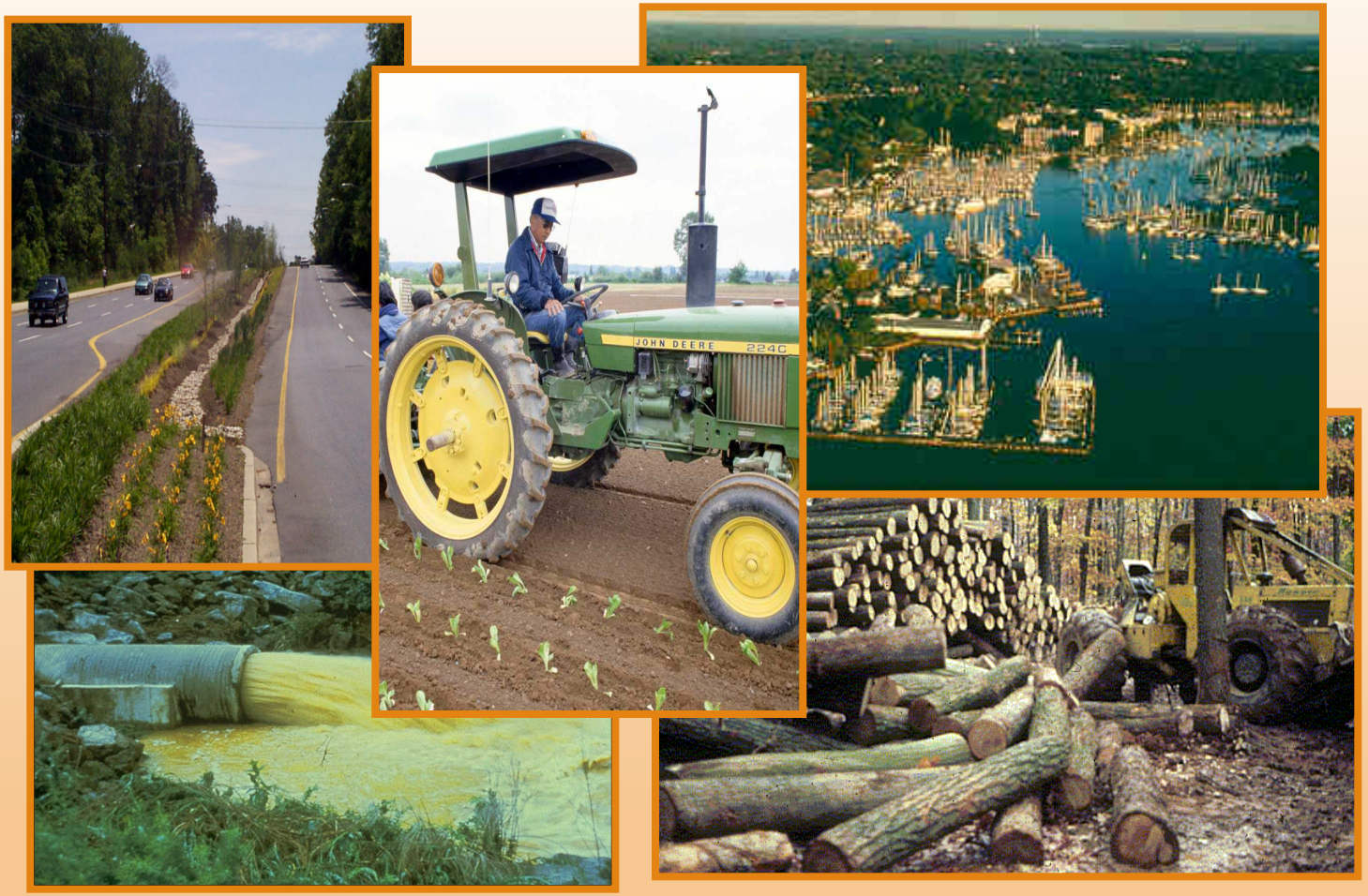
Beyond BMPs

Achieving Environmental Protection and Economic Gain

Marel King, Pennsylvania Director, Chesapeake Bay Commission

The Philadelphia Society for Promoting Agriculture, October 2, 2014


JOHN DEERE
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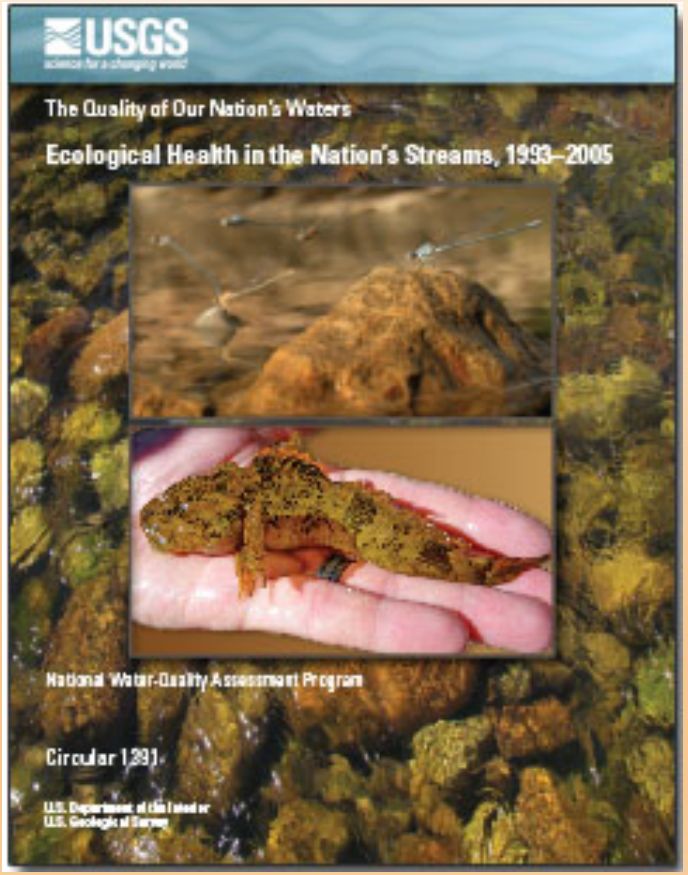
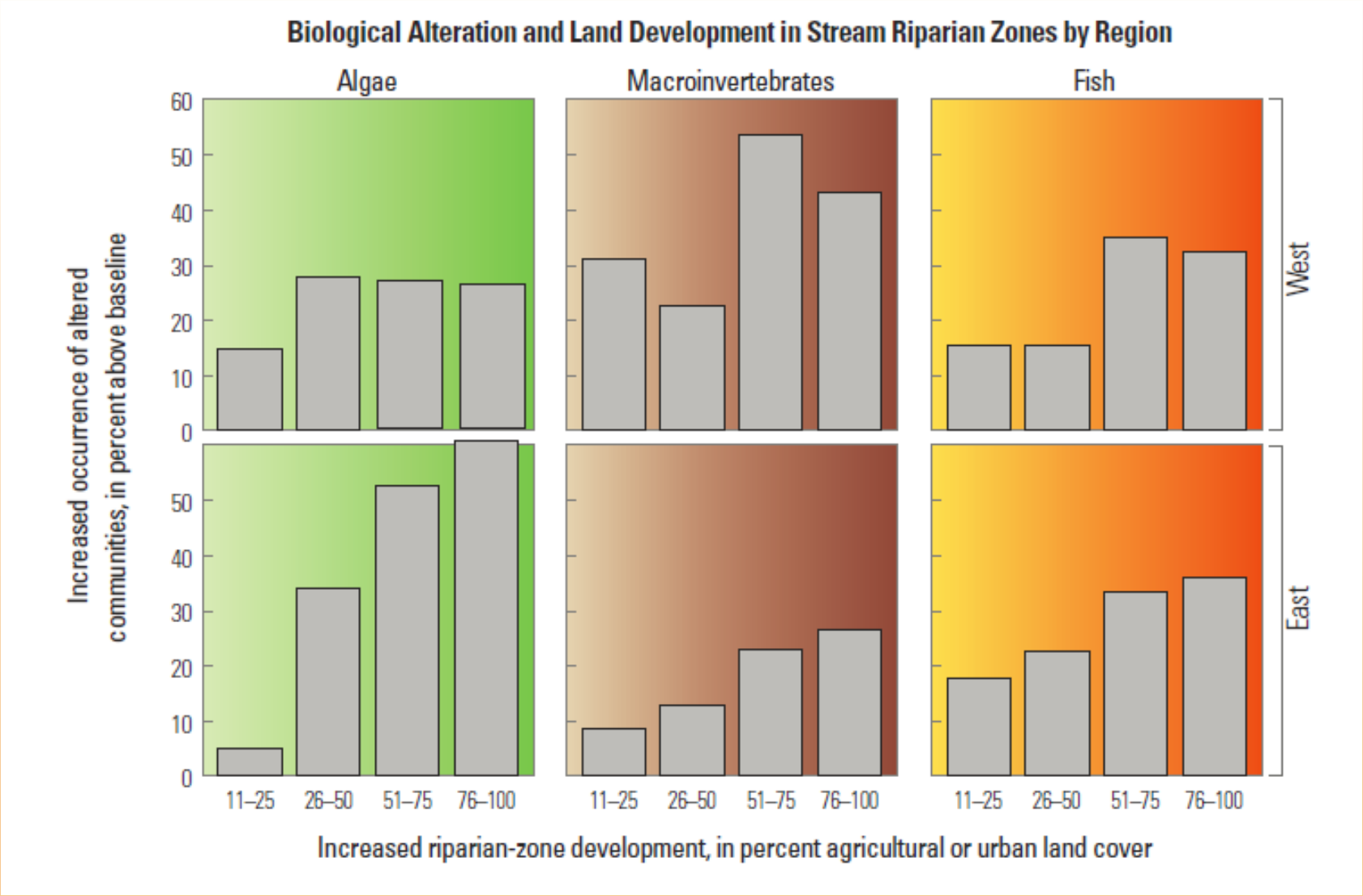
Our Streams are Unhealthy



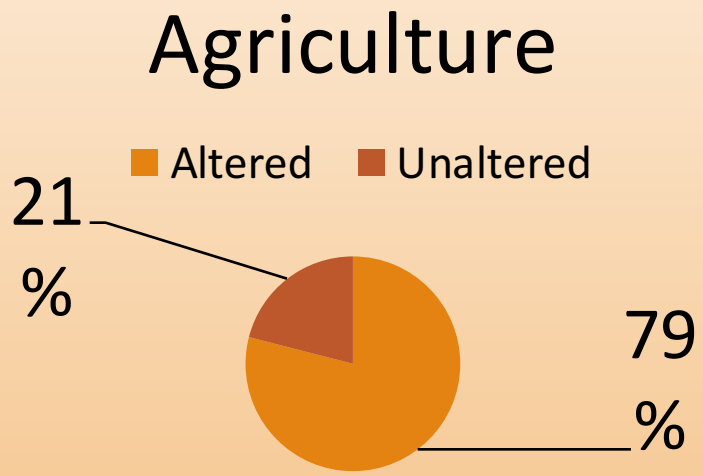


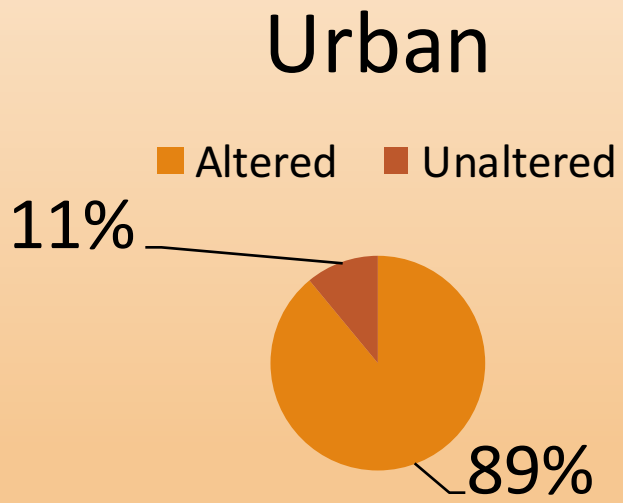
Carlisle, D.M., Meador, M.R., Short, T.M., Tate, C.M., Gurtz, M.E., Bryant, W.L., Falcone, J.A., and Woodside, M.D., 2013, The quality of our Nation's waters—Ecological health in the Nation's streams, 1993–2005: U.S. Geological Survey Circular 1391, 120 p., http://pubs.usgs.gov/circ/1391/.

What are the factors?

- Nutrients
- Salinity
- Pesticides
- Toxic Sediments

Alteration is Not Inevitable





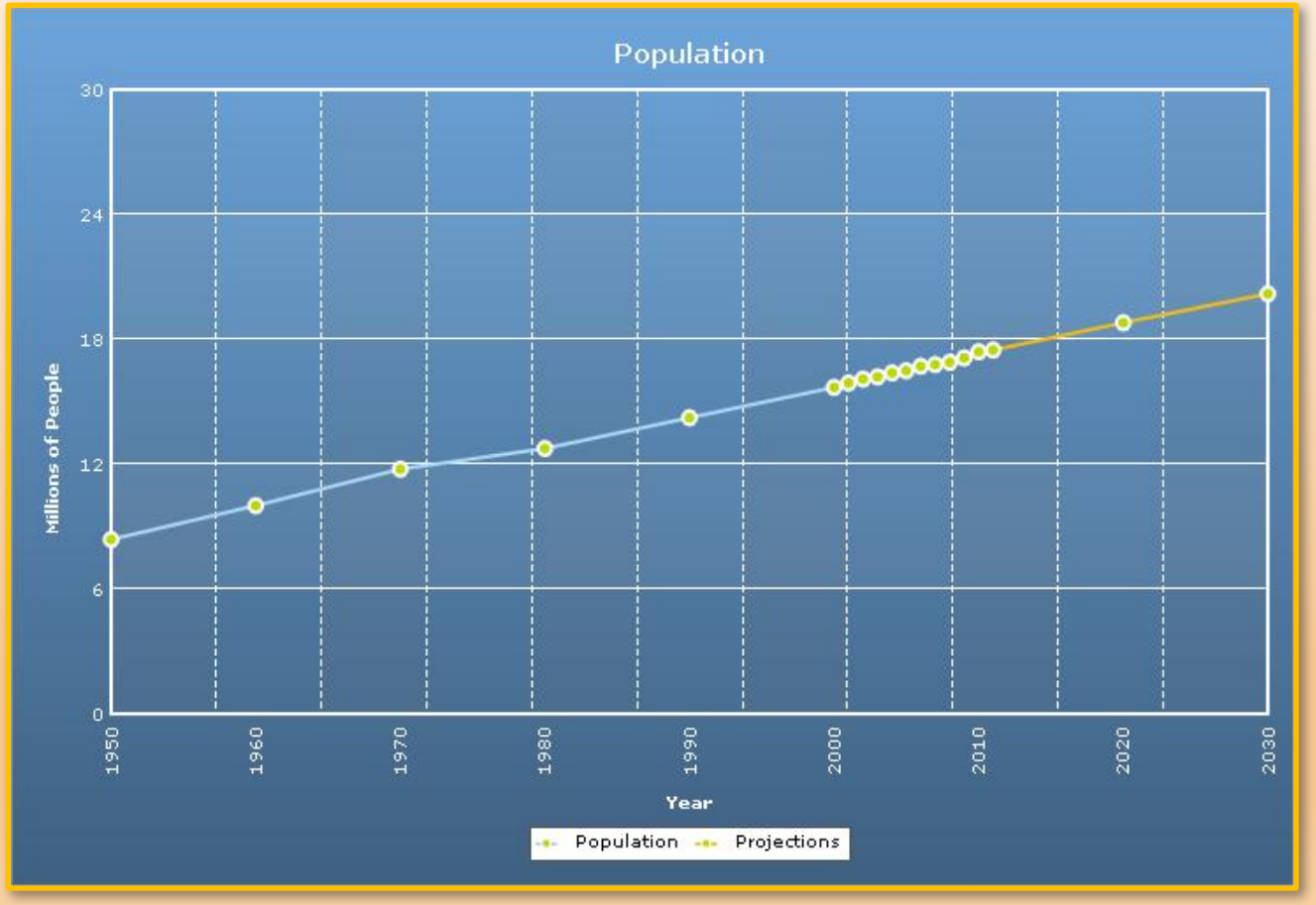
BMPs Work

Alternative Crops
Animal Waste Management System
Barnyard Runoff Control
Biofilters
Commodity Cover Crop
Conservation Till
Continuous No Till
Cover Crop Early
Cover Crop Late Drilled Rye
Cover Crop Standard
Cropland Irrigation Management
Dairy Manure Injection
Dairy Precision Feeding and/or Forage Management
Decision Agriculture
Dirt & Gravel Road Erosion & Sediment Control
Enhanced Nutrient Management
Forest Buffers
Grass Buffers; Vegetated Open Channel
Horse Pasture Management
Irrigation Water Capture Reuse
Lagoon Covers
Land Retirement to hay without nutrients (HEL)
Land Retirement to pasture (HEL)
Loafing Lot Management
Mortality Composters
No Till allowing combinations with other practices
Non Urban Stream Restoration
Non Urban Stream Restoration (interim)
Nutrient Management
Off Stream Watering Without Fencing
Poultry Litter Injection
Poultry Litter Treatment (alum, for example)
Poultry Phytase
Precision Intensive Rotational Grazing
Prescribed Grazing
Shoreline Erosion Control
Soil Conservation and Water Quality Plans
Sorbing Materials in Ag Ditches
Stream Access Control with Fencing
Streamside Forest Buffers
Streamside Grass Buffers
Streamside Wetland Restoration
Swine Phytase
Tree Planting/Vegetative Environmental Buffers
Wetland Restoration

BMPs provide "Reasonable Assurance"

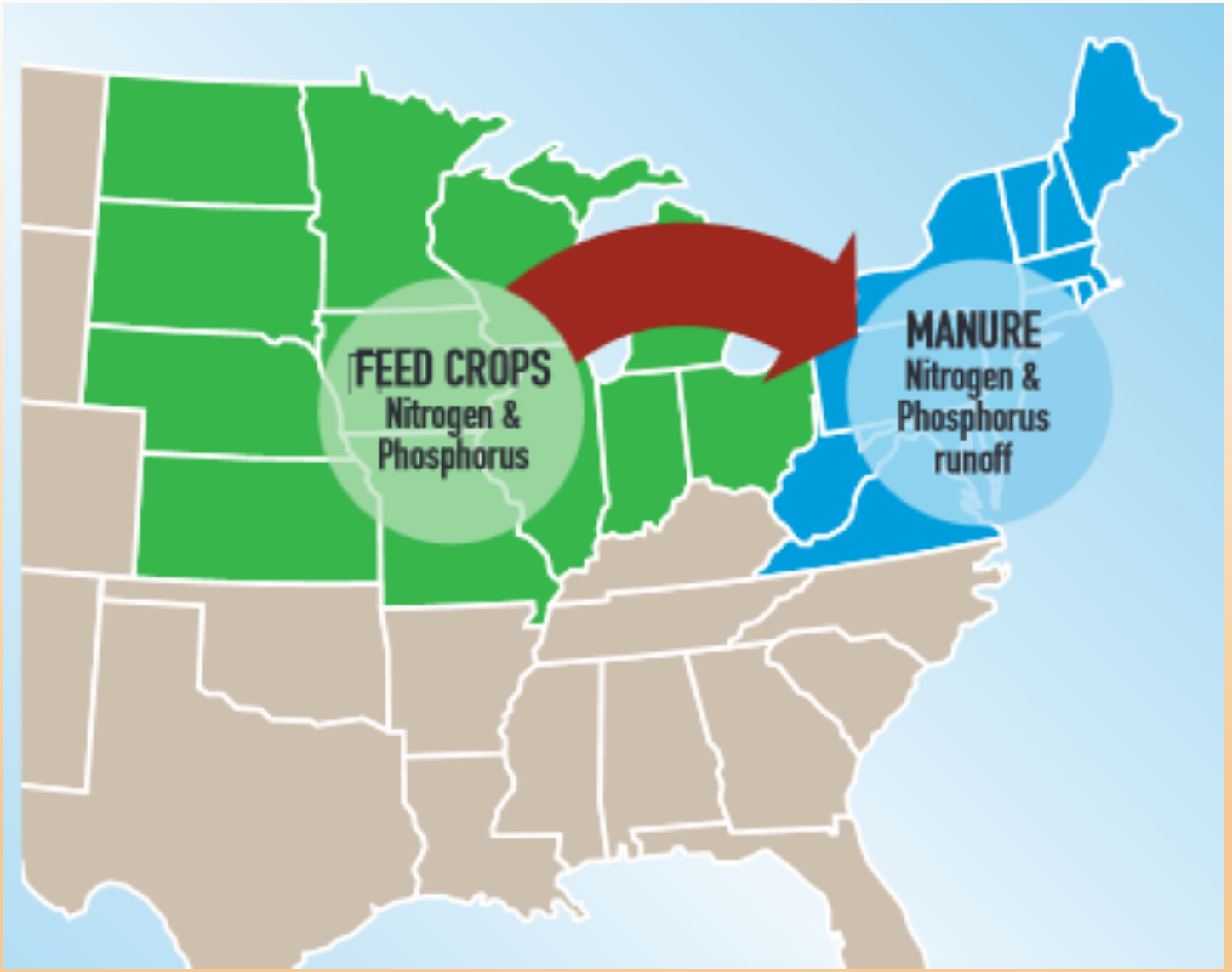
CHALLENGE:
BMPs must be counted

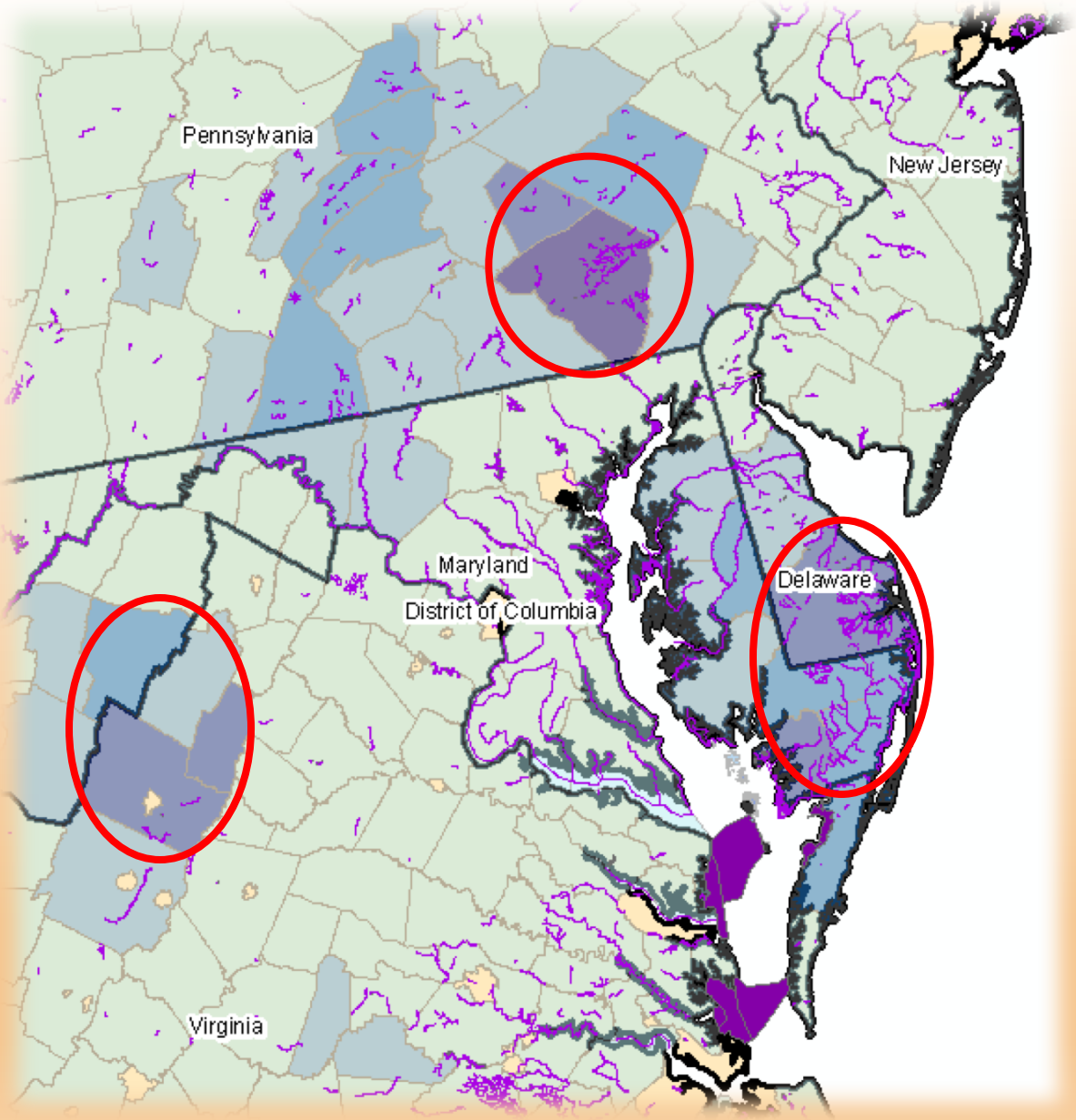
CHALLENGE:
BMPs need acres



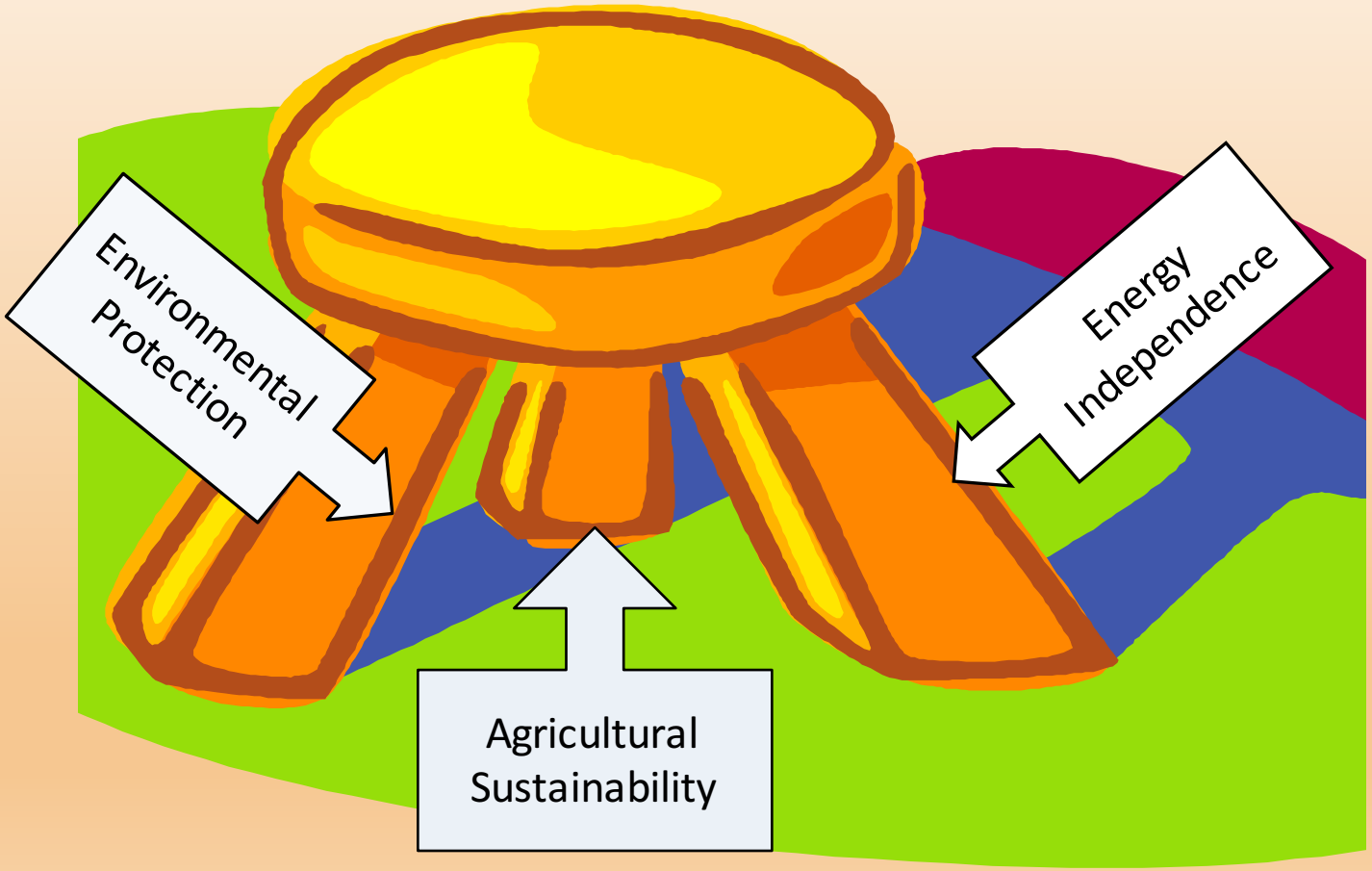
CHALLENGE:
BMPs need funding

CHALLENGE:
BMPs cannot achieve 100%

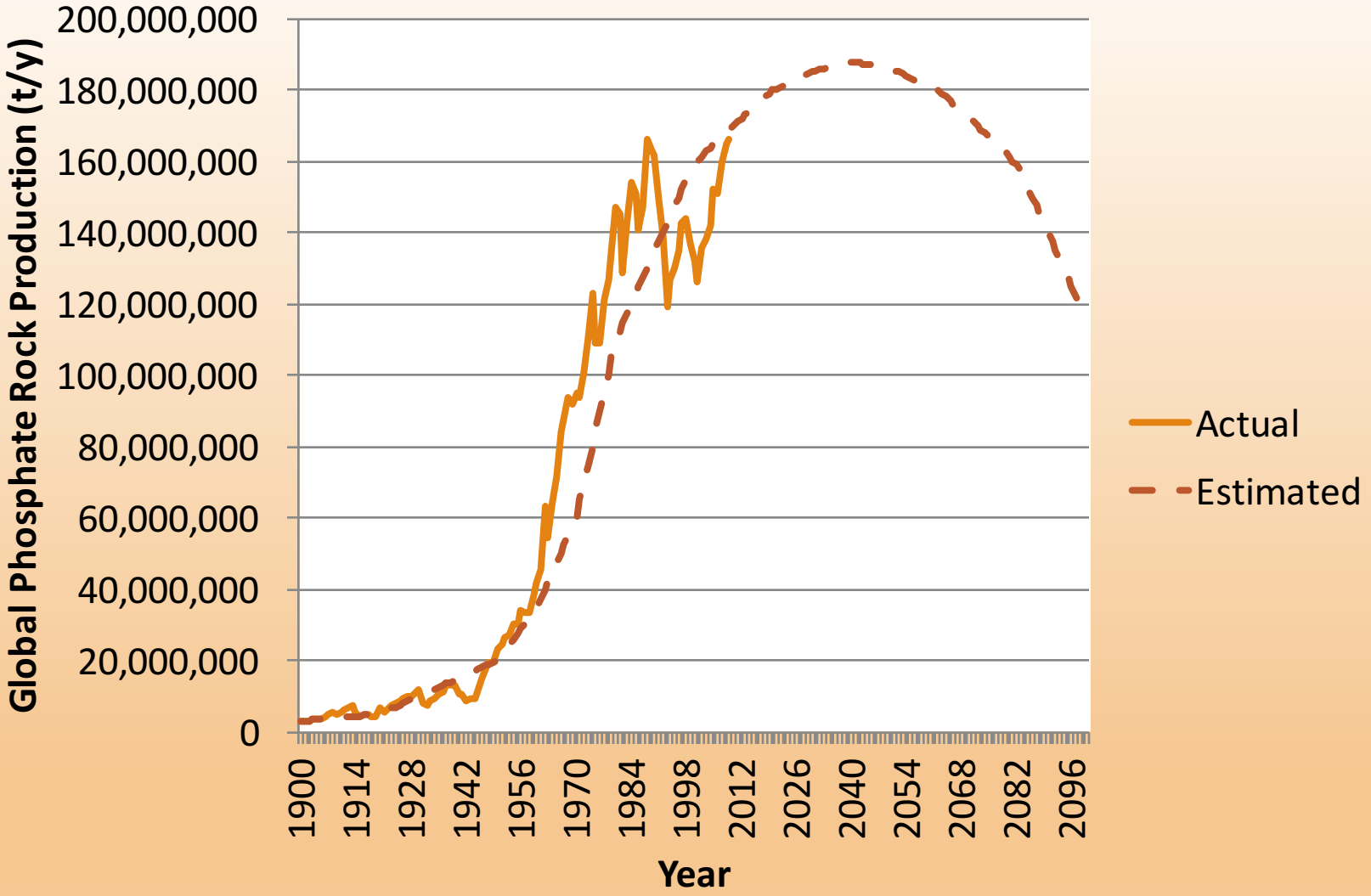

FEED CROPS
Nitrogen &
Phosphorus
MANURE
Nitrogen &
Phosphorus
runoff


Pennsylvania
New Jersey
Maryland
District of Columbia
Delaware
Virginia

SOLUTION?
Manure to Energy



Peak Phosphorus?



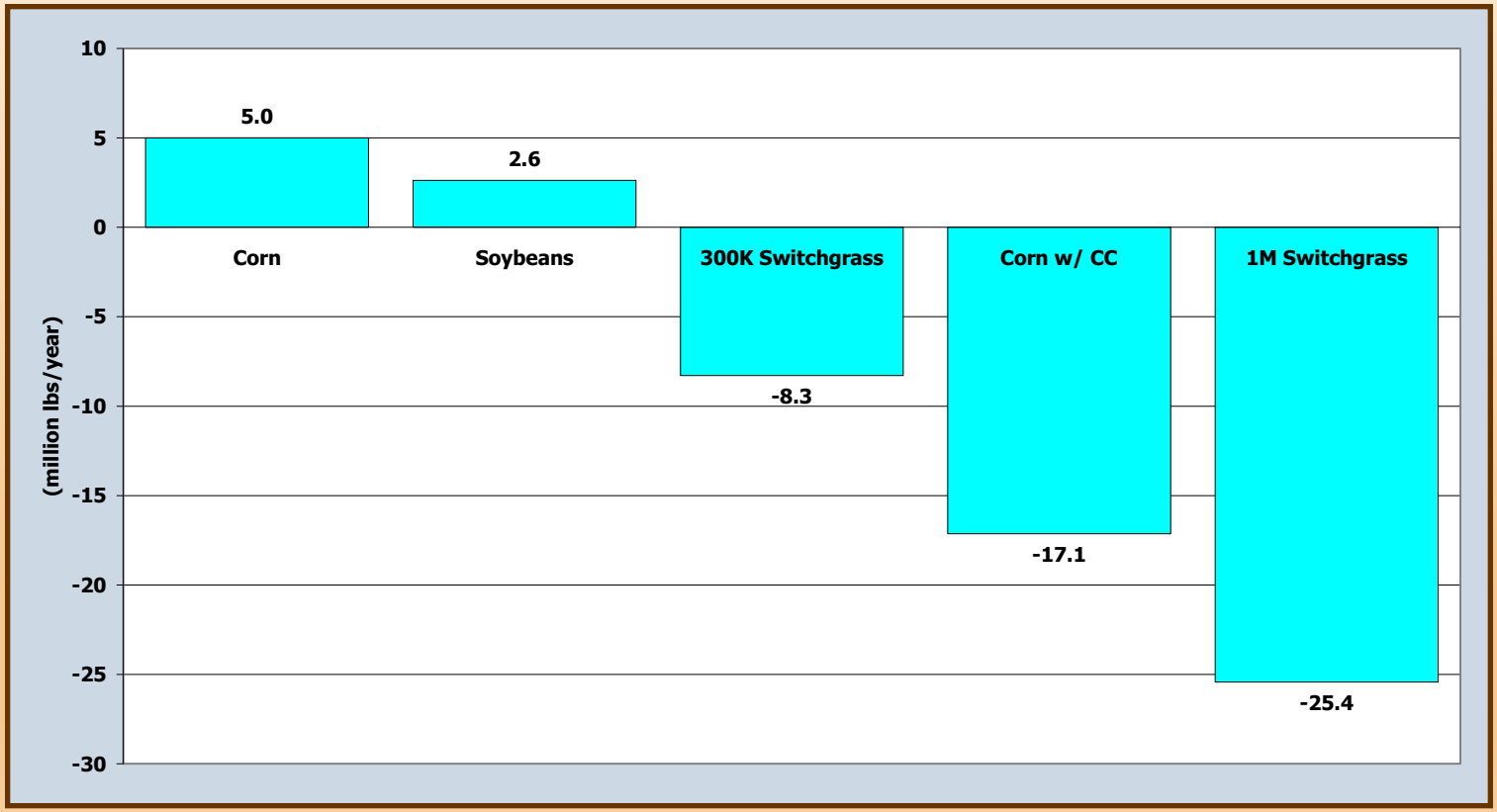
Actual data from D.A. Buckingham and S.M. Jasinski, Phosphate Rock Statistics, U.S. Geological Survey, October 19, 2010.
Estimated values based on reports by: D. Cordell, J-O Drangert, and S. White, Global Phosphate Research Initiative, 2009 and P. Déry and B. Anderson, *Peak Phosphorus*, Energy Bulletin, August 13, 2007.

Manure to Energy CHALLENGES

- Multiple funding streams required
- Regulatory obstacles
- Low demand

SOLUTION? Biofuels

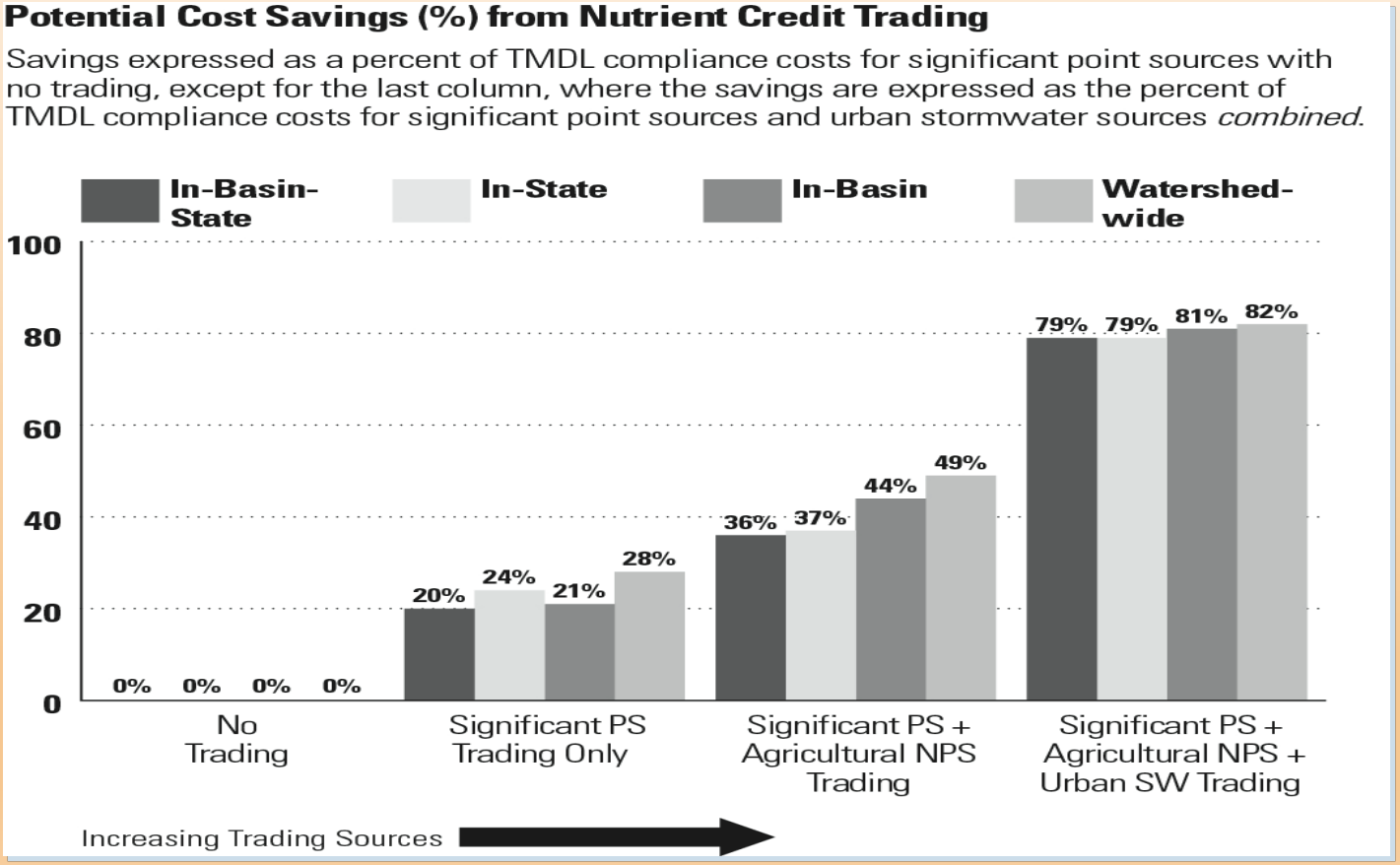
Watershed Delivered Load to Bay, Millions of lbs. N/y



Biofuels CHALLENGES

- Infrastructure
- Demand

SOLUTION?
Ecosystem Service Credits



Ecosystem Service Credits CHALLENGES

- Quantifying the credit
- Creating demand

Conclusion

- BMPs will continue to be an important tool
- Additionally, more systemic change will be needed
- Implementation must have economic value

Thank You

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Chesapeake Bay Commission
Policy for the Bay