Chesapeake Bay Commission
Policy for the Bay

EXECUTIVE SUMMARY · MAY 1, 2012

Nutrient Credit Trading for the Chesapeake Bay
An Economic Study

Nutrient credit trading, a market-based strategy for achieving nutrient reductions necessary for improved water quality, offers *potential* cost reductions that may be significant in light of the current costs of achieving Chesapeake Bay water quality goals. Initial cost estimates for implementing the Total Maximum Daily Load (TMDL) for the Chesapeake vary widely, but are in the billions of dollars. New strategies, such as nutrient credit trading, are designed to reduce pollution at a lower cost and must be considered as part of the bundle of strategies needed to achieve the Baywide TMDL.

As a policy leader for the Bay, the Chesapeake Bay Commission is responsible for providing policy research and options to its member states. As part of its overall analysis of TMDL implementation options, the Commission engaged RTI International to analyze the potential cost savings that nutrient credit trading might provide. The specific intent of this study is to examine a range of trading scenarios applied to the watershed as a whole. Although four states in the watershed have initiated nutrient trading programs, it is not the purpose of this study to estimate the cost savings from any of the state-specific programs, given the newness of the programs and the considerable variation among them.

This analysis is limited to examining the potential cost savings for TMDL pollution reduction in two categories of nutrient sources: *"significant" point sources* (such as large wastewater treatment plants and industrial facilities) and *federally regulated urban stormwater sources*.

The study is framed around the following nutrient credit trading scenarios. (In all scenarios, TMDL water quality goals are met.):

- Trading among significant point sources only.
- Trading among significant point sources and agricultural nonpoint sources.
- Trading among significant point sources, agricultural nonpoint sources, and regulated urban stormwater sources. In this last scenario, regulated stormwater sources were considered only as purchasers, not generators, of credits.

Each scenario is then examined under four geographic parameters:

1. Trading within the same state and river basin.
2. Trading across river basins but within the same state.
3. Trading across state lines but only within the same river basin.
4. Trading among states and among basins throughout the Chesapeake Bay watershed.

The focus on *potential* savings recognizes that, while markets for nutrient credits provide strong incentives to reduce costs, they do not work perfectly. Therefore, the estimated cost reductions are best interpreted as the best-case or upper-limit estimates. At the same time, to help ensure against overstating the potential cost savings for any of the scenarios, the study incorporates a host of limitations and caveats. One of the most important limitations is on the total level of

(Over)

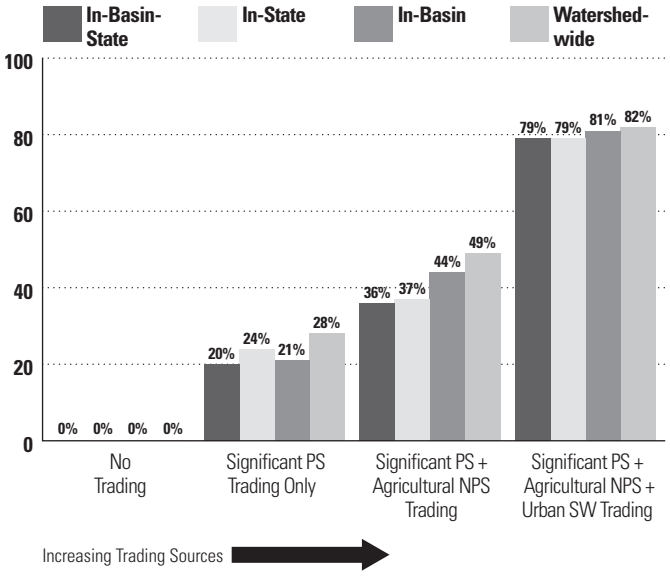
trading. Based on an analysis that utilized local water quality protection as its prime consideration, EPA determined that a conservative estimate of the tradable loads that could occur without impacting the local water quality of tidal receiving waters is 9 million pounds of nitrogen and 200,000 pounds of phosphorus. Thus, the study confines the amount of trading to those levels. Other limitations are the use of a 2:1 "trading ratio" for every trade in which agricultural nonpoint sources generate the credit (i.e., to account for uncertainty, the point source must buy two pounds of agricultural nonpoint reductions for every pound it seeks to reduce) and the incorporation of "transaction costs" into every trade involving agricultural nonpoint sources.

Even with these limitations, the study indicates that nutrient credit trading could deliver significant cost savings. The study also shows that the potential cost savings increase as more source categories are allowed to participate in the trading program. The potential savings are particularly high when including urban sources, due primarily to the relatively high cost of controlling nutrients from urban stormwater runoff. The analysis also found that expanding the geographic scope of trading has less of an impact on potential cost savings than expanding participation to include other sources.

The study's emphasis on *potential* cost savings is important in using and interpreting the results. While the study incorporated various limitations and caveats, there are other factors that the study could not include that might affect the actual savings. For example, the study does not consider stormwater pollution controls that governments must implement for purposes other than achieving the TMDL. Finally, it is important to recognize that cost savings are not the only factor that federal, state, and local governments must consider when looking at nutrient credit trading. Decision makers will need to consider cost savings along with a multitude of other policy factors.

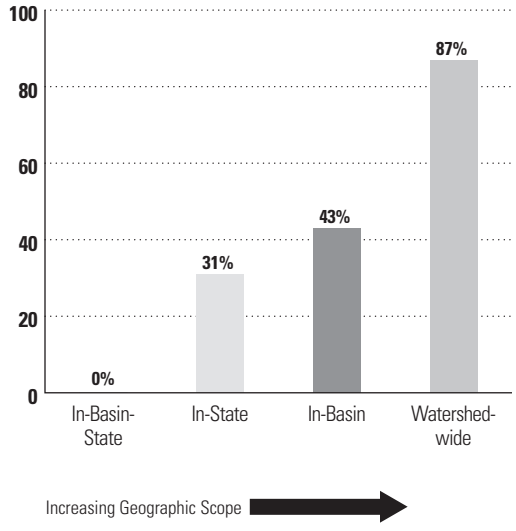
Potential Cost Savings (%) from Nutrient Credit Trading

Savings expressed as a percent of TMDL compliance costs for significant point sources with no trading, except for the last column, where the savings are expressed as the percent of TMDL compliance costs for significant point sources and urban stormwater sources *combined*.



Potential Cost Savings (%) from Trading to Offset New Loads

Savings expressed as a percent of costs due to additional treatment capacity at wastewater treatment plants. Does not include costs from land use changes.



The complete study and appendices can be found at www.chesbay.us.