

Ohio River Basin Water Quality Trading Project Case Study

EPRI would be happy to provide additional information as needed. The project website contains an abundant amount of information at <http://wqt.epri.com>

What are/were the drivers for starting a water quality trading program? What do you hope to achieve with the program?

The Ohio River Basin Water Quality Trading Project was developed in 2009 to test Water Quality Trading (WQT) as an innovative way to manage nutrient pollution in the Ohio River Basin (ORB) while meeting social, economic, and ecological criteria required for a viable trading project over the long run. An initial goal of the project was to build the most robust set of protocols to date and address key gaps in the knowledge base of WQT programs for nutrients. As nutrient loading comes from many sources, this project facilitates broad, non-traditional collaborations towards achieving a common goal of protecting and improving watersheds at lower overall cost to society, primarily by providing a means for major dischargers to meet effluent objectives using more cost-effective trades with other dischargers or with non-point sources. A primary driver for the project was the anticipated promulgation of nutrient criteria and resulting effluent limitations in Ohio, Kentucky, West Virginia, and along the main stem of the Ohio River. A robust WQT program would provide a cost-effective option for power companies to meet the water-quality based effluent limit (WQBEL) portion of their NPDES permits. Trading would also provide important ancillary benefits to farmers and ecosystems, which are not realized by installing technologies at point source locations.

What was the process to get the program created and running?

There are several reasons why EPRI chose to work on an interstate basis, the most fundamental of which was dictated by the watersheds themselves. First, watershed boundaries cross state lines. To have the largest possible benefit in-stream, it was important to follow the actual functioning of the watershed units. Second, an adequate number of credit buyers and sellers is necessary for any WQT to be successful. The larger the area, the greater the number of potential buyers and sellers, and the more viable the resulting market. Lastly, a regional program would benefit from shared stakeholder input, infrastructure, tools, and models, reducing the burden of program costs to local entities and enabling the creation of a defensible WQT program supported by science and modeling.

Because this project is so far-reaching and the largest of its kind, it has been important from the very beginning to identify and engage stakeholders so that concerns are appropriately identified and evaluated. Among other activities, the project convened a series of listening sessions with farmers and Soil and Water Conservation Districts (SWCDs) in the ORB before developing the trading plan to identify potential barriers that might discourage them from participating. The early engagement of agriculture was critical to design a system that would work for both buyers and sellers. In addition, EPRI organized and maintains several stakeholder advisory committees to provide feedback on the emerging market including agriculture, environmental groups, power companies, wastewater treatment plants, and federal and state agencies.

Another fundamental factor for water quality trading lies in understanding, quantifying, and managing the uncertainty associated with the implementation of on-the-ground practices and the associated water quality benefits over time and place. The project incorporates two robust models to do so: 1) the EPA Region 5 spreadsheet model for estimating nutrient reductions at the edge of the field (i.e., Point of

Generation Credits); and 2) the Watershed Analysis Risk Management Framework (WARMF) model for estimating nutrient attenuation (reduction) from the edge-of-field to the point of use (i.e., Point of Use Credits).

To install practices and bring verified credits to market, EPRI works directly with the state agriculture agencies and permitting authorities in Ohio, Kentucky, and Indiana. EPRI has contracts with the three state agriculture agencies to provide private financial support (raised by EPRI) to SWCDs. Each state received seed funds to remove 100,000 pounds of total nitrogen and total phosphorus over a ten-year period. The state agriculture agencies move these funds to SWCDs who then contract with farmers to install approved U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) conservation practices to meet performance standards that are known to reduce nutrient loading.

A credit registry has been customized for the ORB to track credits from creation to sale and ultimately to retirement and to provide checks and balances to ensure that each credit is created and used precisely as approved under the trading plan. The online registry provides security measures and transparency to the market. In one online location, information about each farm project is captured; agriculture agencies “verify” that best management practices have been implemented on the ground; permitting authorities “certify” that a credit is appropriate for regulatory compliance; credit buyers can search for credits available to purchase; and stakeholders can view public information on projects. Further, the registry utilizes EPRI’s watershed model to calculate specific trade ratios for each transaction based on the location of particular buyers. The registry assigns a unique serial number for each pound of nutrient reduction, eliminating the risk of double counting. The serial number allows for tracking of the credit through its lifecycle. The registry is a key component of the ORB project and ensures the same process and protocols are applied across multiple states.

Who are/were the players in the process?

Initiating this complex and robust program has involved many diverse partners working very closely with EPRI, including American Farmland Trust (AFT), Markit Environmental Registry, Ohio Farm Bureau Federation, Ohio River Valley Water Sanitation Commission (ORSANCO), Troutman Sanders, LLP, U.S. Department of Agriculture, the U.S. Environmental Protection Agency, the University of California at Santa Barbara, Ohio Department of Natural Resources, Kentucky Division of Conservation, and Indiana State Department of Agriculture, Ohio Environmental Protection Agency, Kentucky Department for Environmental Protection, and Indiana Department of Environmental Management, and many others. Five [advisory committees](#) were established in 2011 to ensure the appropriate oversight and implementation of the project.

What challenges did you face in development and implementation of your program?

A fundamental challenge for water quality trading lies in understanding, quantifying, and managing the uncertainty associated with the implementation of on-the-ground practices and the associated water quality benefits over time and place. This challenge is especially pronounced when trading involves agricultural non-point sources as credit sellers, where there is no specific pipe from which to monitor or measure water quality. Assuring the public that these nonpoint source credits are “real” and comparable to installing a point source technology to meet permit obligations requires careful documentation, modeling, and science at a level that can be costly and require highly skilled training. Ultimately, trade ratios have been developed to ensure that the amount of reduction resulting from the trades has the same (or better) effect as would be required using a technology option at the point of compliance. Related to this, the balance between a farmer’s confidentiality and the public interest in verifying that a permit limit is being met continues to be a point of discussion. Further, questions

regarding who holds liability for failed conservation projects that generate credits still needs to be discussed (credit buyer, credit seller/aggregator, farmer, verifying party, or other). From an economic perspective, it is still to be determined if, after applying all necessary rigor and science, the market will support the fully burdened price of credits, particularly in the general absence of numeric nutrient criteria, TMDLs or other water quality regulatory “drivers” in the ORB.

What is the public perception of the program?

EPRI takes extensive efforts to ensure the transparency of the project. We’ve developed tools, documents, and processes to be responsive to requests for project information, all of which are posted on the project website at <http://wqt.epri.com>. While we cannot speak for “the public” based on informal polls, we believe that the public “trusts” the project and is appreciative of its transparency.

Did we use the WQT Toolkit? If so, describe its use.

No. Our project was established prior to the Toolkit. However, we believe that some of our project documents may have been utilized during the development of the toolkit.