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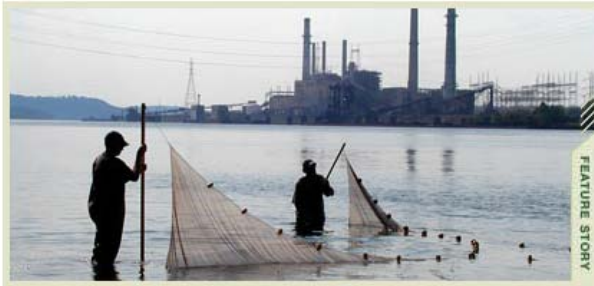
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Water quality trading is a valuable concept for the electric and agricultural industries. The Electric Power Research Institute (EPRI) recently secured \$1.3 million in grants from the EPA and the USDA to launch a regional water quality trading program in the Ohio River Basin.

Photo courtesy of EPRI

// THE ECONOMICS OF CONSERVATION //

Trading Up for Water Quality

Producers and industry pursue growing interest in the market-based approach of water quality trading

By Christy Couch Lee

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Water quality trading continues to gain interest among industry and agricultural producers as a viable market-based alternative to achieving water quality improvements. New projects in the Midwest explore how to structure a large-scale trading program, the feasibility of trading in the Wabash River watershed and the support role that agricultural industry can play.

Water quality trading assigns economic value to the benefits generated by conservation practice implementation, according to the Conservation Technology Information Center (CTIC) publication, "Getting Paid for Stewardship: An Agricultural Community Water Quality Trading Guide."

Nutrient or sediment reductions resulting from agricultural conservation practices are the "currency" in water quality trading. Producers sell the reductions realized from conservation practices on their land. Municipalities, industries and wastewater treatment plants buy the reductions, in the form of "credits," to help meet regulatory requirements and avoid costly technological upgrades.

Before a trade for water quality can happen, there must be a buyer, a seller and a reason to trade, such as an impaired water way that would benefit from the exchange of pollution reduction credits. The Electric Power Research Institute (EPRI), an organization with members representing more than 90 percent of the electricity generated and delivered in the United States, recently secured \$1.3 million in grants from the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Agriculture (USDA) to launch a regional water quality trading program in the Ohio River Basin. The program aims to reduce nitrogen and phosphorus discharges into the Ohio River.

EPRI in action

EPRI conducts research and development relating to the generation, delivery and use of electricity for the benefit of the public. An independent, nonprofit organization, EPRI helps to address challenges in electricity, and provides technology and economic analyses to drive long-range research and development planning, says Chris Mahoney, EPRI communications leader in environmental research.

Properly designed and deployed, this first-of-its-kind interstate trading program will produce water quality credits for nitrogen and phosphorus, Mahoney says.

Jessica Fox, EPRI senior scientist, says water quality trading is a valuable concept for the electric and agricultural industries.

"We've looked at different strategies for the power industry to address its impacts on natural resources," she says. "Water quality trading is of interest to the electric industry because it has challenges with pollution to waterways. For power plants and wastewater treatment facilities, it can be expensive to install technology to deal with the pollution coming out of these systems. They're interested in coordinating with nonpoint-source contributors."

Although the EPA and USDA grants were awarded in the fall of 2009, EPRI has worked on water quality trading issues for years. Prior to applying for these grants, EPRI had invested nearly \$1 million in a business case assessment, running cost-benefit scenarios and determining interest from potential stakeholders.

A guide to water quality trading terms:
Point-source contributors: A concentrated source of pollution. For example, permitted facilities, such as wastewater treatment plants and electric companies. Nonpoint-source contributors: Pollution that results from many difficult-to-pinpoint and control sources, rather than one specific source. For example, runoff from farm operations, forestry, urban environments, mining, construction and others.

"EPRI has been working in the Ohio River Basin for quite some time," Fox says. "It passed our feasibility assessment against 30 criteria for a quality water quality trading program. We did our due diligence for four years, and the decision wasn't made off the cuff."

Many EPRI members, including Duke Energy and Hoosier Electric Power Cooperative; non-members, including American Farmland Trust, the Miami Conservancy District and Ohio River Valley Water Sanitation Commission; numerous point-source contributors, including electrical power companies and wastewater treatment plants; and nonpoint-source contributors – primarily agricultural producers – are involved in the project.

"We're anticipating, initially, the biggest traders from the nonpoint-source aspect being agricultural producers," Fox says. "Partly, we anticipate their involvement, as they have the ability to cost effectively and most easily reduce nitrogen and phosphorus discharges into water bodies through various farming management practices along water bodies."

Understanding what producers know, don't know and are concerned with regarding water quality trading is an important step, Fox says.

"Through our project collaborator American Farmland Trust, we've reached out to farmers with listening sessions in several areas to get their perspective," she says. "We want to make sure this project is amiable for all groups. And, we're especially sensitive to farmers and their concerns."

Initial reaction from producers has been positive, Fox says.

"Producers seem to be interested in the concept of getting more revenue on best management practices (BMPs) they may not otherwise get paid for," she says. "We're currently working through some details on which BMPs allow them to gain credits in this water quality trading program, so they can engage."

Fox says EPRI is initially focused on bringing regulatory bodies from multiple states together. "In order to do interstate trading for water quality, we need to make sure the state regulations are set up to facilitate that," she says. "We're trying to get everyone together."

Ultimately, Fox says, the project will depend on several groups coming together for the greater ecological good.

These issues in the Ohio River Basin – reactive nitrogen – didn't just come from one source," she says. "It came from a whole suite of sources. And, it will take a lot of non-traditional cooperation to find a solution. We're bringing folks to the table who otherwise wouldn't have worked together."

"And, at the core of it all is financial considerations," Fox continues. "Producers selling credits are making money. Industries buying credits are saving money."

Fox says EPRI anticipates trades to begin in 18 months to two years.

"Depending on how the trading goes, this is not a long-term project for EPRI," Fox says. "If the trading works, and if it meets everyone's expectations and goals, some other entity will take over the project. We are not going to be the clearinghouse – that's not EPRI's goal."

Success beyond dollars

Fox says a unique aspect of the EPRI project is the documentation process of benefits.

"There is a lot of speculation on water quality trading, and on if it reaches goals on ecological issues," Fox says. "We are using a watershed model to track and demonstrate measurement data. We're not just allowing trades to happen and then jumping to conclusion."

By utilizing the Watershed Analysis Risk Management Framework (WARMF) model developed by EPRI and utilized by EPA, rules and parameters will be established for the program, Fox says.

"This will be the first time an ecological model has been used to establish these parameters," Fox says. "In this project, we can tell you what negotiations mean, in terms of the tradeoffs between ecological matters and efficiency, rather than the negotiations being purely political. The negotiations will be based on science, social and political issues, and we'll be able to run the model five to 20 years out."

The benefits can be significant for participants in any water quality trading program across the country, Fox says.

"It's potentially a cost-effective and ecologically effective way to reduce discharges into water," she says. "For farmers, the credit is the benefit. They can look at it as another cash crop."

CTIC addresses the Wabash River Watershed

In July 2009, CTIC launched a three-year project to address the potential for water quality trading in the Wabash River Watershed, which begins in western Ohio, flows through Indiana and ends in Illinois, where it meets the Ohio River.

CTIC Project Director Christa Martin-Jones says the Wabash River Watershed was chosen because it is the largest northern tributary to the Ohio River, which is a major contributor to the Mississippi River.

"Recent TMDLs developed to address impairments in the Wabash River Watershed identify sources of nutrient loads, including agricultural nonpoint source runoff and a variety of permitted point source discharges, including municipal and industrial wastewater discharges, storm water discharges, combined sewer overflows and sanitary sewer overflows," she says.



The EPRI water quality trading project focuses on point source contributors in the Ohio River.

Photo courtesy of EPRI

It appears that all the necessary components for a trade exist – buyers, sellers and impaired water quality – in the Wabash River Watershed. But, will point and nonpoint sources participate? Will a trading program make a difference? Martin-Jones says CTIC's project will answer those questions and evaluate interest of Wabash River Watershed stakeholders in purchasing or selling credits.

"We are looking at this as a way for industry and municipal wastewater treatment plants to mitigate for their pollution by purchasing water quality credits from nonpoint-source contributors," Martin-Jones says. "It's usually cheaper to buy credits than to update facilities."

CTIC and its partners are gathering preliminary data on the number and types of polluters in the watershed. In the next step, they will begin modeling to determine how much pollution is coming from various regions.

This month, CTIC will partner with American Farmland Trust to conduct a focus group of producers in the Upper Wabash River basin, to understand their perceptions of water quality trading and determine what questions they may have about the process.

Martin-Jones says water quality trading is important to CTIC for many reasons.

"We see water quality trading as an opportunity for agricultural producers to profit from the public benefit they're providing by implementing conservation practices on the ground," Martin-Jones says. "Water quality trading can benefit agricultural producers, the public and the environment. And, it can save money for industries and municipalities when they expand or need to adhere to water quality regulations."

CTIC Second Vice Chair Charlie Schafer, Agri Drain Corporation president of Adair, Iowa, agrees.

Agri Drain gets involved

Schafer says water quality trading can help agricultural producers implement conservation practices that may otherwise be cost prohibitive.

"I think that when you try to encourage producers to implement water quality practices on their land, there's some downside for producers," Schafer says. "They need to apply for the practice, in terms of cost-share and technical assistance, they need to construct the practices themselves or hire it done, and they need to pay their portion of the cost-share. They sacrifice tillable acres, and they have to manage and maintain these systems and farm around them. There are significant issues that the producer could view as negative, yet these systems are largely for an off-farm, downstream benefit to the public."

However, he says, by providing credits for these systems, producers may be more likely to jump on board.

"In order to encourage these producers to take on this work, there needs to be something other than 50 percent cost-share and feeling good about doing the right thing," Schafer says. "If we, as a country, feel we need to rely on rural America to get environmental benefits, water quality trading is a market approach to get the benefits to the beneficiaries."

Agri Drain is a member of the Agricultural Drainage Management Coalition (ADMC), of which Schafer also serves as president. The ADMC serves as a resource of the latest technologies in drainage water management systems and assists agricultural and environmental communities in improving water quality.

In an attempt to help producers adopt better drainage water management (DWM), ADMC was awarded a three-year, multi-state, USDA/NRCS Conservation Innovation Grant in 2006. Covering Minnesota, Iowa, Illinois, Indiana and Ohio, this project's goal was to improve and refine regional recommendations necessary to encourage the widespread adoption of DWM and maximize the agronomical and environmental benefits provided by the practice, Schafer says.

Through implementation of the project, significant data was documented on nutrient savings from DWM, which could be important to nutrient trading programs, Schafer says.

"Although all data will not be available until April 30, we're excited to see the results," Schafer says. "In the data we've received to date, we're seeing significant reductions in nitrogen transport. It varies, depending on the amount of rainfall and soil types, but we're seeing anywhere from 30- to 60-percent reductions in outflow from drainage systems. And in some areas, we're also seeing some substantial yield increases."

Schafer believes everyone in agriculture has a role to play in the water quality trading process.

"Water quality trading presents a real opportunity for producers to do the right thing for the environment, but not to have to sell the farm to do it," Schafer says. "Through education and industry support, producers will rise to the challenge and do a good job of managing those natural resources."

FOR MORE INFORMATION

- EPRI water quality trading program – www.epri.com/ohiorivertrading
- Agricultural Drainage Management Coalition – www.admcoalition.org
- CTIC's project, "Market Feasibility Assessment for Water Quality Trading in the Wabash River Watershed" – CTIC project director Christa Martin-Jones: 317-508-2450 or jones@ctic.org.
- CTIC's publication, "[Getting Paid for Stewardship: An Agricultural Community Water Quality Trading Guide](#)"

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