

Ohio River Basin Trading Project

Frequently Asked Questions



The Ohio River Basin Trading Project is a first-of-its-kind interstate multi-credit trading program and represents a comprehensive approach to improving regional water quality and minimizing costs to the public and stakeholders. The project focus is on designing and developing pilot water quality trading markets for nitrogen and phosphorus discharges and greenhouse gas emissions. The project area will involve a large set of stakeholders – including regulatory agencies, power companies, farmers, wastewater treatment facilities and other industrial dischargers – working collaboratively to protect watersheds throughout the Ohio River Basin. The project may also benefit downstream water bodies as far away as the Gulf of Mexico.

1. What is water quality trading?

Commercial operations such as manufacturing, power plants, industrial processes, wastewater treatment facilities, etc. hold permits issued by local or regional regulatory agencies that allow discharges into water bodies (rivers, lakes, streams). Permitting is the system by which regulatory agencies set water quality standards for safe, clean water. Typically, discharges are reduced or eliminated through control technologies or operational procedures that minimize use of the regulated substance. Water quality trading is a market-based, approach that allows one discharge source to purchase reduction credits from another source. It is analogous to the Acid Rain Program for sulfur dioxide and nitrogen oxide emission reductions and has the potential to achieve water quality standards at a much lower overall cost compared to implementation of technologies and best management practices alone. The Ohio River trading project will establish a pilot water quality trading program for nitrogen and phosphorous discharges into Ohio River Basin watersheds.

2. How does water quality trading work?

A trading program enables facilities facing high discharge control costs to buy reductions from another facility with lower control costs. This exchange, or trade, results in the same reductions at a lower overall cost, providing more flexibility for achieving water quality standards. In this project, entities in the Ohio River Basin will have the option to control nitrogen and phosphorous discharges through a trading market.

3. Are there any active water quality trading programs in the United States?

Approximately 80 pilot projects, feasibility assessments, and trading programs have been conducted in the United States in the last 15 years, though few have resulted in active trading. EPRI has conducted in-depth reviews of these programs for guidance in developing the Ohio River Basin Trading Program. The Ohio Basin Program is designed to maximize both ecological and economic success not yet achieved in other efforts and will be a first-of-its kind interstate trading program.

4. How do nitrogen and phosphorus discharges effect water quality?

Nitrogen and phosphorus are limiting nutrients in many water bodies in the United States, and can impede organic growth of bacteria and other organisms important to the overall health of the ecosystem. When limiting nutrients like nitrogen and phosphorus are introduced into a water system, plants can grow unimpeded. When plants grow, they consume more oxygen. Excessive plant growth can result in oxygen limited water, which leads to the suffocation of many organisms, like fish and other aquatic animals. The lack of oxygen can result in a "dead zone" (an oxygen-deprived area that cannot support aquatic or marine life). Even when nitrogen/phosphorous are not limiting (i.e., further addition does not result in excessive plant growth), excess nutrients can degrade overall water quality and affect fish tissue and many other aspects of a water system.

5. How does trading nutrient credits impact water quality?

At a minimum, trading credits for nitrogen and phosphorous could result in the same ecological outcome as would have been otherwise achieved, but at a lower overall cost. However, given the financial incentives to engage in a trading program (i.e. the potential value of the trading credits), it is possible for this market-based approach to achieve greater improvements in water quality than could have been achieved by traditional command and control regulatory approaches such as stricter permit limits.

6. What organizations are participating in the Ohio River Trading Project?

EPRI is working with the following organizations to implement this project: Kieser & Associates; Ohio River Valley Water Sanitation Commission (ORSANCO); American Electric Power; Tennessee Valley Authority; Duke Energy; Hoosier Rural Electric Cooperative; American Farmland Trust; The Miami Conservancy District; Texas Institute for Applied Environmental Research; Bren School of Environment, University of California at Santa Barbara and Hunton & Williams. However, there are thousands of stakeholders in the project area and EPRI is interested in participation from these organizations and individuals.

7. Which states make up the Ohio River Basin?

The effort covers a large geographic area. Parts of eight states make up the Ohio River Basin including Illinois, Indiana, Kentucky, Maryland, Ohio, Pennsylvania, Tennessee and West Virginia. The Ohio River Basin Trading Project will be the largest interstate trading program ever established.

8. What is the general timeline for the project? When do you anticipate the first trade?

EPRI anticipates having an established program and functioning credit trading market in 3 to 5 years, with early trades beginning in 1 to 2 years.

9. How does the project plan to monitor/ evaluate/document the success of the trading program after it has been implemented?

There are many factors included in evaluating success including ecological, economic, and social factors. EPRI will use a watershed framework computer model (Watershed Analysis Risk Management Framework – WARMF) to simulate the trading program prior to implementation; inform the design, implementation and adaptive management; and to track the ecological success of the trading program. Other systems will be necessary for the monitor and verification of the trades on a day-to-day basis to be sure that reduction actions are in fact implemented. Still other systems will be necessary for monitoring the economic and broader social success of the program. The project expects to establish systems to answer the following basic questions: Did parties achieve commitments? Did we get the water quality improvement that we thought we were going to get? Are there social and economic benefits of the trading program?

10. Will this project have effects on other emissions beyond nitrogen and phosphorous?

The EPRI team has plans to investigate the potential to trade greenhouse gas emissions credits in collaboration with water quality trading. We may also consider supporting other ecosystem markets, but have not completed the feasibility research for additional opportunities.

11. What is the Gulf of Mexico hypoxic zone and how is it related to this project?

The Gulf of Mexico Hypoxic Zone is a “dead zone” in the northern Gulf of Mexico along the Louisiana-Texas coast that cannot support marine or aquatic life due to depleted oxygen levels in the water. Its area varies in size, but can cover up to 6,000-7,000 square miles beginning at the Mississippi River delta and extending westward to the upper Texas coast. It is the largest hypoxic zone currently affecting the United States and the second largest hypoxic zone worldwide. The dead zone is believed to be caused in part by excess nutrients (primarily nitrogen and phosphorus) delivered from the Mississippi River in combination with seasonal movements of fresh and salt waters. The Ohio River Basin is one of six sub-basins that drain into the Mississippi River Basin and it is possible that the nutrient loads from the Ohio Basin are contributing to problems in the Gulf of Mexico. While it is uncertain the degree to which water quality trading in the Ohio River Basin will effect the Gulf of Mexico Hypoxic zone, it is emerging as an important tool to address water quality issues.

12. What is EPRI's role in developing this project?

EPRI leads this project, having funded a feasibility assessment and completed due diligence for the project concept. EPRI is supported by a multi-institutional collaboration as described above and on our website: www.epri.com/ohiorivertrading.

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