

MCOR to Lead NSF Science Education Grant on Shale Gas, Energy

A science- and energy-based program focusing on Pennsylvania counties with natural gas exploration and production developed by a multidisciplinary team of Penn State researchers is part of a \$2.5-million grant from the National Science Foundation.

“Marcellus Matters: Engaging Adults in Science and Energy” aims to enhance the general public’s understanding of science, engineering and energy through community-based activities that promote “doing” science, develop local expertise on energy issues and draw on residents’ knowledge of their environment.

Michael Arthur, professor of geosciences and co-director of the Marcellus Center for Outreach and Research (MCOR), is the principal investigator. Researchers from the colleges of Agricultural Sciences, Education and Arts and Architecture as well as others from Earth and Mineral Sciences also are involved in the three-year project.

While Pennsylvania has a history of natural resource extraction, the magnitude of the Marcellus Shale natural gas industry is posing social, economic and environmental challenges for rural communities experience drilling activity.

“This NSF project will address those challenges as it will provide opportunities for the residents of the Marcellus region to gain skills in scientific inquiry and build an understanding of science and energy that can be used in managing change,” Arthur said.

The need for science-based information is critical as discussion about drilling for natural gas in the Marcellus Shale is increasingly contentious with opponents and advocates claiming “facts” in support of their polarized positions. Without sufficient knowledge to evaluate those “facts,” the public is left uncertain about what to believe and who to trust.

Structured around several science, energy and engineering topics, the project will develop a knowledge base to enable and support that evaluation. Those topics include an overview of the U.S. energy picture including supply and demand, resource needs of energy sources and climate change; perceptions of risk and perspectives on “acceptable” and “unacceptable” risks; and the potential environmental impacts of drilling and development on forest ecosystems, wildlife habitats, water quality and introduction of invasive species.

The project is designed around four closely integrated activities with overlapping content. Those activities are geared to adults as they are in a position to make decisions about land leasing, community regulations and other issues related to Marcellus Shale development.

The activities include the Marcellus Community Scientist Program, modeled after Extension’s successful Master Gardener and Master Naturalist programs; a technology-enabled citizen science program; community-based theater performances on risk and uncertainty; and environmental planning workshops using place-based and data-driven visualizations as a basis for community discussion about the environmental and community changes accompanying Marcellus Shale activity.

The project will be coordinated by the Marcellus Center for Outreach and Research, which is supported by the College of Earth and Mineral Sciences, the College of Agricultural Sciences, the Penn State Institutes of Energy and the Environment and Penn State Outreach. Penn State Extension, which has provided informational sessions on Marcellus Shale development since 2005, will have a key role in project implementation.

“There’s a great need for accurate information about Marcellus Shale development for residents, landowners and local decision makers,” said Thomas Murphy, also MCOR co-director and an Extension educator. “This project will address that need and allow participants to understand the science and research related to Marcellus development in a very clear fashion.”

Other researchers on the project include Chuck Anderson, Earth & Environmental Systems Institute; Brian Bills, Center for Environmental Informatics; Seth Blumsack, Energy Policy; Kathy Brasier, Agricultural Economics & Rural Sociology; William Doan, Theater; Barbara Korner, Theater; Douglas Miller, Center for Environmental Informatics; Tim Murtha, Landscape Architecture; Brian Orland, Landscape Architecture; Esther Prins, Adult Education; Eliza Richardson, Geosciences; Susan Russell, Theater; David Yoxtheimer, Marcellus Center for Outreach and Research.