

Energize Ohio: Building Ohio's Energy Future

2012 Annual Report

Energy: A Critical Issue in Ohio

According to the U.S. Department of Energy 2011 EIA Annual Energy Outlook Report, U.S. electricity production will need to increase by nearly 30 percent by 2030 to meet growing demand. Due to their abundance of natural resources and extensive open spaces, rural Ohio communities are positioned to play a central role in future energy development. However, energy development presents both opportunities and challenges to the impacted communities. Energize Ohio, an Ohio State University Extension signature program, provides non-biased, research-based information to address critical energy issues impacting Ohioans.

Energize Ohio Curriculum & Activities

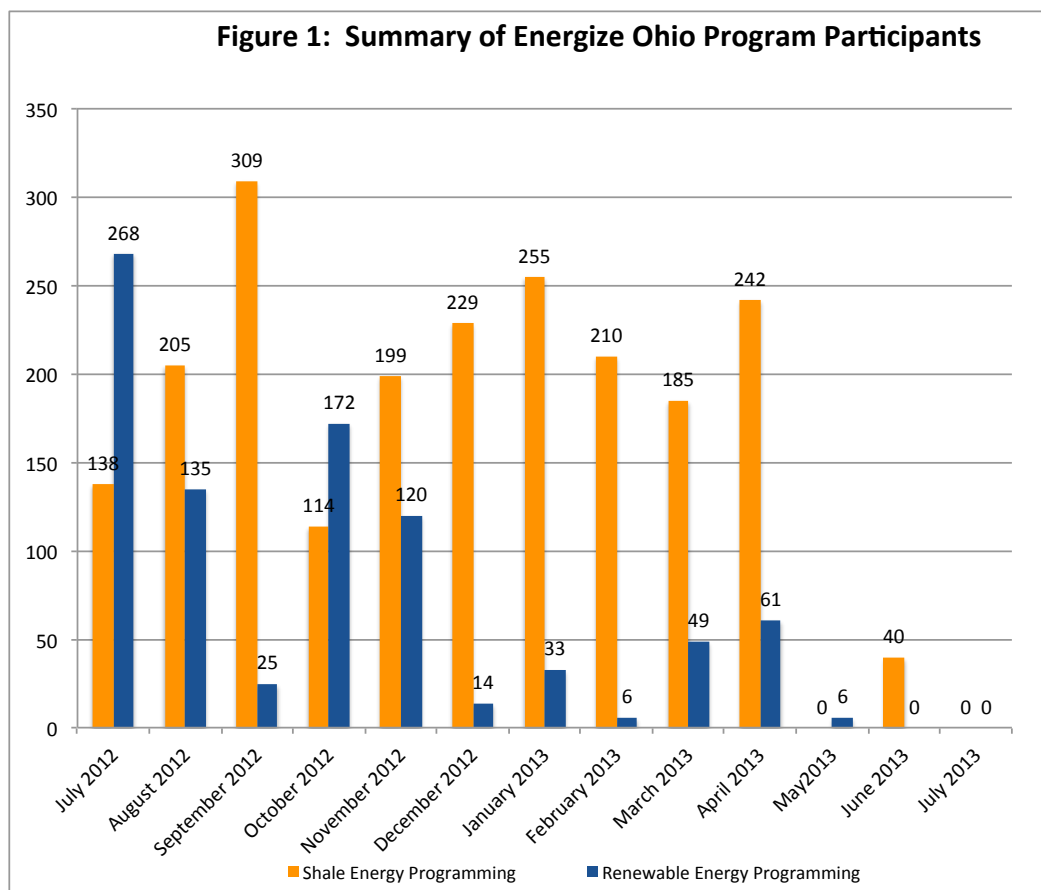
Energize Ohio Signature Program Overview

Energize Ohio is a multidisciplinary program that addresses a wide range of energy education needs including youth education, energy policy, landowner leasing, and sustainable community planning. The curriculum consists of worksheets, presentation materials, workshop materials, bulletins, fact sheets, marketing templates, and evaluation tools. Energize Ohio currently focuses on two initiatives including shale energy development and renewable energy development.

During the Energize Ohio Signature Program's inception year (July 2012 to July 2013), team members delivered roughly 58 programs reaching more than 3,017 participants. Figure 1 illustrates the signature program participants itemized by month and program type. Energize Ohio programming was delivered in 32 of Ohio's 88 counties, demonstrating statewide impact. In addition to teaching energy programs, the signature program team was very active in the development of new energy related publications and educational resources including a Journal of Extension article, 9 published Extension fact sheets, and an additional 10 fact sheets currently under peer review.

Summary of Energize Ohio's Year 1 Accomplishments

- 58 - Programs / Workshops
- 3,017 - Program Participants
- 9 - Published Extension Fact Sheets
- 10 - Fact Sheets Under Peer Review
- 1 - Journal of Extension Article
- 32,318 webpage views by 13,924 unique visitors from all 50 U.S. States and 61 different countries.
- 16 Collaborative Partnerships
- \$27,500 Research Dollars Generated or Committed



Shale Energy Programming Overview

Shale activity in the Ohio began with development of the Marcellus Shale in mid to late 2000's. As the development moved to the Utica and Point Pleasant shale, the geographical footprint grew to include much of eastern Ohio with a "sweet spot" developing in a fairly narrow band from Carroll and Columbiana Counties on the north to Noble County on the south. Much of the development was occurring in a rural, economic struggling, region of the state and has brought development pressures to a region of the state not traditionally required to deal with such issues. With a specific focus on shale development, leasing, taxation, pipelines, and community issues, the OSU Extension Shale Education Program works to educate landowners and communities about the development of Ohio's shale resources. To support landowner education on shale energy, the shale energy team has developed a number of tools to support educational efforts including the following shale energy fact sheets:

1. Summary of Hydraulic Fracturing in Ohio
2. Testing Private Water Sources and Resolving Contamination
3. Natural Gas Drilling: Questions Residents and Leaders Should Be Asking
4. Income Tax Management of Oil and Gas Lease Payments
5. Shale Oil and Gas Payments Are Subject to Ohio Commercial Activity Tax
6. Using the Depletion Deduction to Minimize Oil and Gas Tax Liability



7. The Ohio Dormant Minerals Act: A Process for Addressing Abandoned Mineral Interests (peer review)
8. Facing the Possibility of Leasing for Shale Gas Development on Your Land (peer review)
9. Seismic Testing - Oil & Gas Production (peer review)
10. Issues Near Shale Oil & Gas Development (peer review)
11. Understanding & Negotiating Pipeline Easements (peer review)
12. A Landowner's Guide to Understanding Recommended Pipeline Standards and Construction Specifications (peer review)
13. Oil and Gas Pipeline Easement Checklist (peer review)

In addition, Camtasia relay was used to capture various shale workshops, converting them into 7 electronic media programs. These tools (fact sheets and Camtasia programs) have been instrumental in supporting Extension outreach and education efforts as well as providing a strong OSU Extension presence for those searching the Internet for non-bias factual based shale energy resources.

Renewable Energy Programming Overview

The renewable energy development initiative is designed to enhance community leaders and residents knowledge of renewable energy projects in order to promote best practices and informed decision-making on the implementation of sustainable energy strategies in Ohio's communities. The curriculum consists of six modules, which are designed to progressively expand the participant's understanding of renewable energy development. Starting with a comprehensive introduction to energy policy and renewable energy technologies, the curriculum modules can be used independent to address a specific local interest, or collectively to progressively advance participant's knowledge towards developing a sustainable community energy plan. To support landowner education on renewable energy, the team has developed a number of tools to support educational efforts such as renewable energy fact sheets including:

1. Renewable Energy Policy Series: The Effect of Renewable Energy Projects on Current Agricultural Use Value (CAUV)
2. Rules for Siting a Utility Scale Wind Farm in Ohio
3. Distributed Energy Generation Series: Producing Your Own Electricity in Ohio (peer review)
4. Distributed Energy Generation Series: A Business Retention & Expansion Strategy (peer review)
5. Distributed Energy Generation Series: A Business Guide for Investing in On-Site Energy Generation (peer review)
6. Growing Community Capacity in Energy Development Through Extension Education (Journal of Extension)

In addition to fact sheets, the renewable energy team collaborated with OSU Communications and Technology to develop a workbook for a renewable energy workshop. The workshop teaches the characteristics and features that the community and sites must possess in order to be an appropriate and suitable site for generation scale renewable energy producers. The main objective of this workshop is to build capacity of local leaders teaching them how to assess their community's compatibility for renewable energy development. The program also highlights the importance of linking development potential with the community's renewable energy goals, and that local residents support the initiative.

New Programs Under Development

To grow the program, a number of efforts are currently underway to develop new energy programs that address critical statewide issues. Subgroups have evolved to address new curriculum topics that include:

1) Youth Energy Education - This initiative provides STEM (science, technology, engineering, and math) education to 4-H members. Program participants will be presented a real-life case study centered on locating, producing, and using oil and gas to power a fictional town. Learners will use the engineering design model to test ideas and solve problems at each step along the way. To learn more about this program development effort please contact Bob Horton or Mark Light.

2) Shale Energy Strategic Planning - To support sustainable community development and guide long-range decision-making, community leaders, residents, planners and elected officials need to better understand the characteristics and potential challenges of a natural resource shale based economy. This curriculum will include educational training modules and supporting materials to help communities prepare for the social, environmental and economic impacts of shale development and to develop plans for long-term community sustainability. The program materials will include web based and classroom based modules that can be used by Extension Educators in Ohio and beyond. To learn more about this program development effort please contact Myra Moss, Nancy Bowen, Cindy Bond, or Eric Romich.

3) Distributed Energy Generation as a BR&E Strategy - The overall objective of the Distributed Energy Generation (DEG) as a BR&E Strategy curriculum is to educate business leaders about Ohio's renewable energy and net metering policy and outline best practices to evaluate the potential for a DEG renewable energy system at their business. For example, Campbell Soup Company recently installed a 9.8 Megawatt Solar field designed to offset more than 15% of their electric consumption at their Napoleon Facility. This progressive investment in renewable energy generation allowed the company to establish a competitive electric rate that will be fixed for the next 25 years. This project confirms the



company's commitment to Ohio and positions them to remain competitive in the future. The curriculum will highlight case studies from businesses that have successfully developed DEG systems to demonstrate successful strategies and identify potential challenges in the process. To learn more about this program development effort please contact Nancy Bowen or Eric Romich.

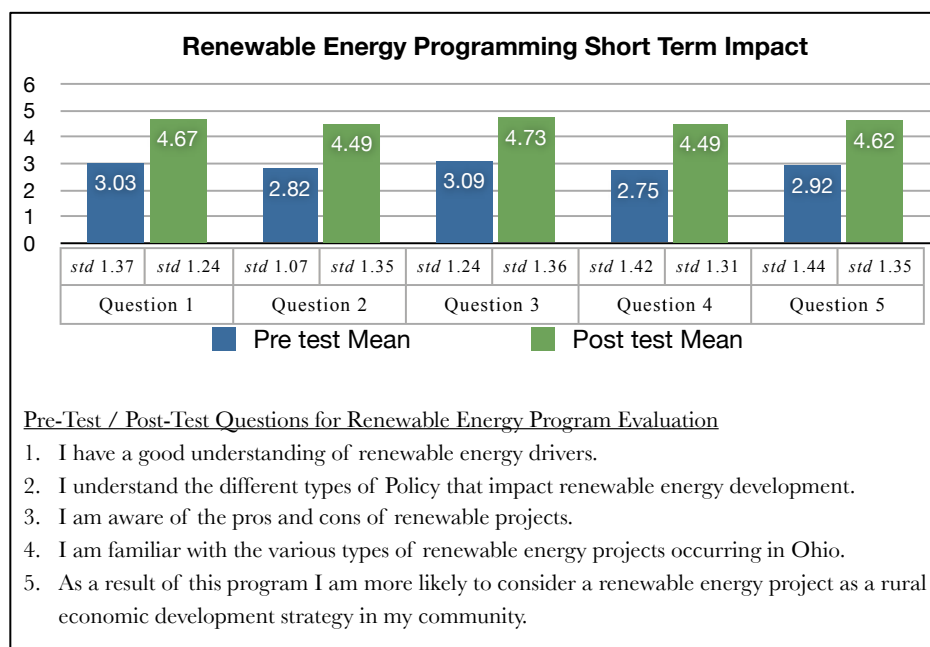
4) *Energy Efficiency* - It can be challenging to know where to start investing in energy efficiency or renewable energy for a home or business. To address this, we are refining web-based tools and developing teaching outlines to teach Educators how to organize and facilitate an energy panel in their county. This program will target extension clientele interested in investing in energy efficiency or renewable energy for their home or business. To learn more about this program development effort please contact Myra Moss or Pat Holmes.

5) *CNG Fleet Conversion* - OSU Extension is collaborating with the OSU Center for Automotive Research (CAR) to develop a program that will help participants evaluate the many vehicle options that are available today to reduce operation costs and emissions. While this effort is in the early stages, we hope to incorporate a sophisticated model developed by CAR that will perform vehicle simulations to evaluate emissions, fuel economy, and cost based on data from pre existing fleets compared to potential adoption of new technologies. To learn more about this program development effort please contact David Civittolo or Eric Romich.

Evaluation of Program Outcomes

Renewable Energy Development

To assess short-term impacts a pre-test / post-test evaluation was distributed during renewable energy programs to measure participant's change in knowledge, awareness, skills, and aspirations. The below table provides a summary of the responses from 137 program participants. To measure intermediate and long-term impact we will follow up with program participants annually to determine if there was change in behavior, decision-making, or practice because of Extension programming that led to the adoption of a renewable energy technology.



Shale Energy Development

The advancements in horizontal drilling have allowed for the development of shale deposits such as the Marcellus and Utica in Ohio. As the discovery of gas in the Marcellus spread west across Pennsylvania into Ohio, offers for leasing land increased exponentially. Land that was once offered a lease at \$10/acre, increased in some cases to over \$6000/acre. In 2006, production moved towards Ohio and a program was developed on leasing land for oil & gas production. The program for years 2011 and 2012 has been offered 28 times to 3570 people in Ohio and Illinois. Evaluations were given out at 16 programs, with 1874 voluntary responses. Attendees were asked how many acres they control for leasing which totaled over excess of 200,000 acres. Ninety nine percent of those completing evaluations indicated they learned new information from these programs. Ninety eight percent of those completing evaluations indicated the information presented would help them make a more informed decision about leasing.



In Jefferson County alone, landowners who participated in OSU Extension workshops received, on average, \$402 more per acre for shale mineral leases.

Program Marketing

Print based marketing materials and tools

Leveraging funding from a Community Development Mini Grant, the Energize Ohio Signature Program team has worked with OSU Communications and Technology to develop a menu of print based marketing materials to promote the program. Materials developed include a tri-fold brochure, a folder to organize program materials, and a banner display to promote program materials at conferences.

Energize Ohio Website

The Energize Ohio Signature Program website (energizeohio.osu.edu) is a collaborative effort between the Office of Energy, Ohio Development Services Agency and OSU Extension. Over the past year, the Energize Ohio Team has updated critical information in the energy efficiency and renewable energy incentives calculator, developed an interactive flowchart to promote OSU Extension curriculum materials, and built an energy library to share Extension publications, fact sheets, and videos. In addition, a strategic and intentional effort was made to create and integrate standardized energy marketing banners into the website pages and materials to support the OSU Extension brand.

In 2012, the Energize Ohio website received 32,318 page views by 13,924 unique visitors (16,343 total visits). The website received visitors from all 50 U.S. States, the District of Columbia, and international visits representing 61 different countries. The Energize Ohio website fills a critical need by providing easily accessible unbiased research based



information on energy topics to Educators and Ohio residents. In addition, the Shale Energy Website was developed to organize shale programs and teaching tools by topic. During the development of the two websites, team members collaborated closely to effectively organize materials without duplicating materials, and seamlessly linking the two websites.

Outreach and Engagement Efforts

In an effort to promote the program, build partnerships, and identify ongoing collaboration opportunities, the Energize Ohio team has participated in a number of outreach and engagement efforts. For example, in April of 2013, the team conducted an Energize Ohio Signature Program Train-the-Trainer Workshop to help Educators understand what role they can play to address energy development issues in their community. In addition, the team presented a poster at the Ohio State University Outreach and Engagement Forum at the Ohio Union. Demonstrating multi-state collaboration, a group of OSU Extension Educators traveled to Illinois to share programming materials, best practices, and experiences with the University of Illinois Extension Educators. Energize Ohio also presented a poster at the 2012 National wind show in Chicago.

Cost Recovery & Collaboration

Program Efforts to Generate Non-Traditional Funding

A number of the Energize Ohio team members were active in the development of funding proposals to support ongoing energy related research and curriculum development. A list of proposals recently submitted are listed in the table below.

| Project Title | Funding Agency | Amount | Investigators | Status |
|--|---|-----------|--|-----------|
| Preparing Communities for Shale Development through Sustainable Planning | EDF Renewables, Wyandot County Commissioners, Wyandot County Regional Planning Commission, OSU Extension CD, and OSU Environment & Natural Resource | \$7,500 | Romich, E., Moon, G., and Sharp, J. | Funded |
| Preparing Communities for Shale Development through Sustainable Planning | North Central Regional Center for Rural Development | \$20,000 | Moss, M., Bond, C., Romich, E., and Bowen, N. | Funded |
| Biofuels: Driving Agricultural Entrepreneurship and Innovation | USDA, Agriculture and Food Research Initiative | \$544,003 | Hall, D., Bowen, N., Marrison, D., and Romich, E. | Submitted |
| Maximizing the Gains of Old and New Energy Development for America's Rural Communities | USDA, Agriculture and Food Research Initiative | \$499,777 | Partridge, M., Civattolo, D., Faggian, A., Lobao, L., and Romich, E. | Submitted |
| Preparing Communities for Shale Development through Sustainable Planning | U.S. Department of Commerce, Economic Development Administration | \$199,766 | Bowen, N., Bond, C., Moss, M., and Romich, E. | Submitted |

Building Collaborative Networks

The Energize Ohio Signature Program team seeks internal and external collaborative opportunities to elevate and expand the program. Collaboration opportunities have been leveraged with a number of organizations including, but not limited to:

1. OSU Extension - Community Development
2. OSU Extension - Agriculture and Natural Resources
3. OSU Extension - Family & Consumer Sciences
4. OSU Extension - 4-H Youth Development
5. OSU School of Environment and Natural Resources
6. OSU Food, Agricultural and Biological Engineering
7. OSU Subsurface Energy Resource Center (SERC)
8. OSU Center of Automotive Research
9. Ohio Utility Providers
10. Public Utility Commission of Ohio
11. Ohio Treasures Office
12. Ohio Energy Office
13. Ohio Department of Natural Resource
14. Ohio Farm Bureau
15. Ohio Bio-Products Innovation Center (OBIC)
16. Ohio Sustainable Agriculture Research and Education Team

