



Supporting Sustainable Energy Transitions: Understanding the Links between Energy and Society

Impact Statement 2019

INVESTIGATORS

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SUMMARY

Energy and people are connected across numerous scales. Human behaviors both impact and are impacted by transitions in energy systems, particularly in the face of climate change and new technologies. SENR faculty are **national leaders** in research on energy production, distribution and consumption to understand the relationships between society and energy systems. We also develop teaching and outreach programs to enhance energy literacy and increase social well-being amid energy transitions.

SITUATION

Ohio has historically been a leader of the production and use of energy. Ohio's coal industry fueled the industrial revolution while our coal and nuclear energy continue to power the region's largest population and industrial centers. More recently, Ohio has hosted shale development via hydraulic fracturing, large wind farm development, and large-scale solar arrays. These energy transitions affect all residents, landowners, and consumers, though the distribution of costs and benefits from production and consumption of energy is spread unevenly across the state. Research is needed to guide public policy to maximize social, economic, and environmental outcomes. Despite its importance, many residents have little understanding of the state's energy systems. Research, teaching, and outreach programs are required to mitigate problems associated with the production of energy and to increase energy literacy to allow consumers to make informed decisions about their own behavior.

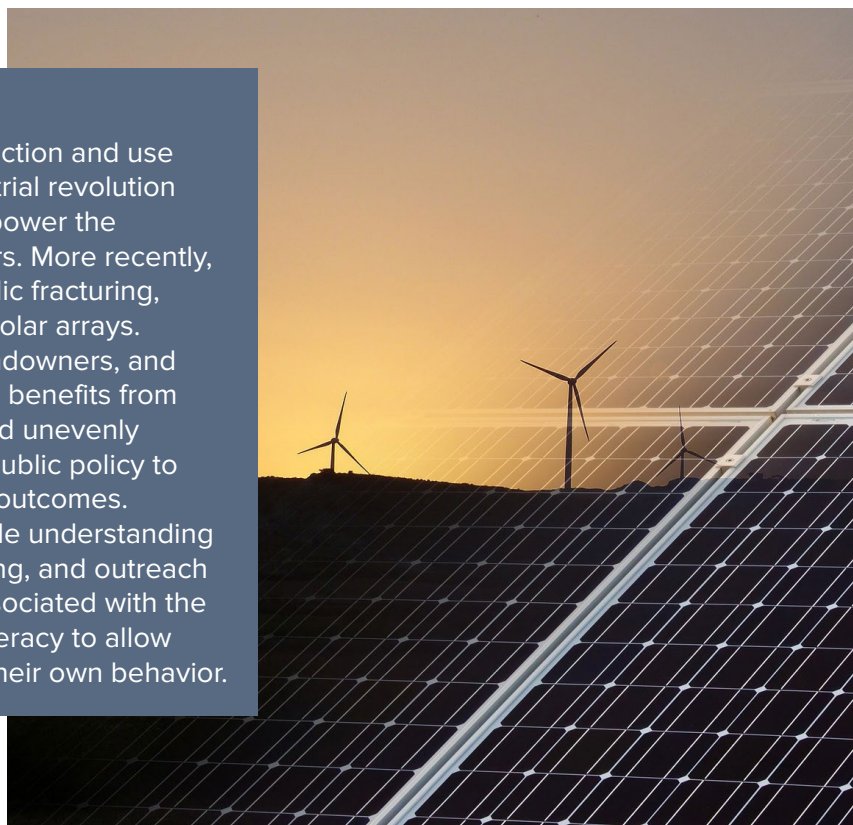


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RESPONSE

SENR faculty and students bring diverse scientific research and outreach skills to unpack the linkages between people and the production and consumption of energy.

Our faculty and students are **leading research projects** to understand:

- how states legislate and regulate energy production
- how landowners respond to opportunities to host new types of energy production
- how different forms of energy development and distribution impact local residents and communities
- variation in attitudes towards energy development, distribution and use
- drivers of consumer behaviors and energy usage patterns

Our courses use energy issues to explore the complicated linkages between policy and the social, economic and environmental outcomes of energy transitions. Students gain **increased levels of energy literacy, knowledge of the social-political, environmental and economic aspects of energy**, and learn how to apply this knowledge to real world problems and case-studies.



IMPACT

Supported by competitive external grants, in 2019 our faculty continued to **grow a nationally-recognized research agenda on social aspects of energy transitions**. Two of our faculty helped write a successful 5-year NSF National Research Traineeship grant, which is being used to **launch an interdisciplinary graduate specialization in sustainable energy**. In another project, we conducted extensive text analysis of media stories to examine the drivers of conflict over hydraulic fracturing for oil and gas production across 15 different states. As part of an NSF INFEWS project, we distributed almost 5,000 surveys in 2019 to assess how farm operators and non-operating landowners in the Great Lakes region are likely to respond to economic pressures and incentives associated with sustainable energy policies. Findings showed that support for wind energy development was stronger among operators than non-operators, and farmers with larger operations were more likely to allocate land to wind energy. Finally, we conducted a study to evaluate the impact of sustainability-focused discussions on building energy use among roommate pairs in a dormitory at Oberlin College. In addition to our research, our work in the classroom continued to raise the energy literacy of hundreds of Ohio State undergraduate and graduate students by engaging them in hands on applications of academic theory and research to tackle real world energy issues.

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