Shaping Oklahoma's Renewable Energy Future

Division of Agricultural Sciences and Natural Resources
Oklahoma State University

The goal set forth by the 25 x '25 National Steering Committee is lofty: Replace 25 percent of America's current energy consumption with renewable forms of energy. Traditional economics suggest that bigger is better, but this may not be the case for all forms of renewable energy. Oklahoma State University's vision for the future intersection of energy and agriculture involves a *decentralized energy production system*. The system would consist of dispersed energy generation plants, potentially using a different technology and/or biomass feedstock combination appropriate to specific regions of states and the nation. A decentralized system offers numerous benefits:

Optimum Technology Selection

Our vision involves matching a region to the appropriate resources and generating local solutions for the fulfillment of energy needs.

Reduced Feedstock Supply Risk

Diversification of feedstocks leads to improved logistics and reduced risks associated with fueling huge energy production systems, particularly important for the low density feedstocks that potentially may be used in agriculture-based energy production.

Simplified Byproduct Utilization

Many byproducts associated with renewable energy production will be available for beneficial, cost-effective local uses in a decentralized system.

Renewable energy may take a different shape in specific regions of the country.

Reduced Transportation Costs

Transportation costs are reduced threefold, in the feedstock supply chain, distribution of the final product and in the dispersal of byproducts and/or waste products.

Expanded Rural Economic Development

A decentralized energy production system helps to disperse monetary gains, particularly into local economies. If agriculture is to play a significant role in the future of renewable energy, there must be a significant benefit to America's agribusiness operators and rural communities.

Lessened Vulnerability to Sabotage

Dependence on a small number of energy sources makes the United States vulnerable to potential attacks on the nation's energy supply. Diversification reduces that risk.

Reduced Burden on Local Utilities

As new industries are introduced into local communities, the demand on local utilities can be significant. Large water supplies may be required for processing, as well as increased wastewater treatment capacity. A decentralized system provides a better means to distribute the burden and reduce the effect on local municipalities.

OSU's Role in Key Transformational Processes

OSU has a strong history of renewable energy research and education.

The renewable energy landscape will be a mosaic of diverse elements, meeting specific needs at the local, state, regional and national levels. Oklahoma State University is well suited to help shape America's energy future through all three aspects of its state and federally mandated land-grant mission: teaching, research and extension.

Teaching

A major focus is to educate the next generation of engineers and scientists in renewable resource utilization. Programs are targeted at all levels, including pre-college students and teachers, undergraduate and graduate students, industrial collaborators and the general public.

Research

OSU will continue to expand research efforts, addressing the critical issues in further establishing renewable energy industries. Areas of emphasis will include enhancing productivity of potential feedstocks, improving conversion technologies and optimizing the value of co-products and by-products.

Extension

It is critical to extend the renewable energy knowledge base to the community. Decision-making tools will be developed and used by a resource team to help local leaders evaluate renewable energy options in their region. The tools may include economic analysis models, local utility infrastructure evaluation and predictive tools for land-use changes.

Land-grant universities must take an active role in shaping the renewable energy landscape of the future. OSU is committed to developing the necessary tools and relevant expertise to help community leaders and residents make sound decisions about renewable energy development while balancing economic, social and environmental considerations.

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An often overlooked but critical clientele is the general public.

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