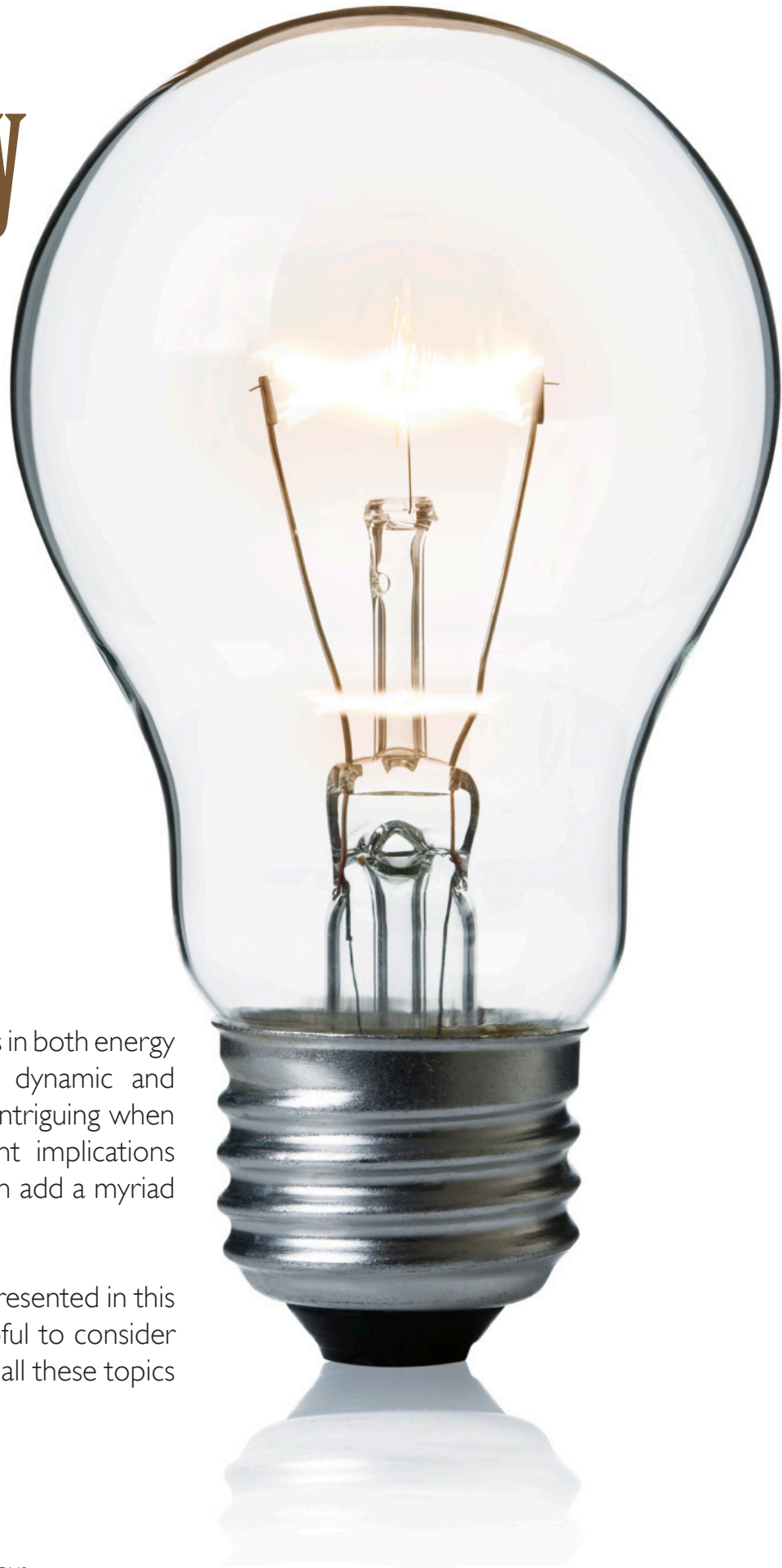


The Energy Future of Rural America

BY LEANN M. OLIVER

Rural America plays varied and key roles in both energy production and consumption. These dynamic and complex relationships are even more intriguing when juxtaposed with regional development implications and global water scarcity, both of which add a myriad of significant opportunities.

As a prelude to the variety of papers presented in this edition of *Rural Connections*, it is helpful to consider the “big picture” environment in which all these topics coexist.



Why Energy Matters to America

Energy Security

Because energy is basic to every facet of both urban and rural American life, its security aspects are paramount. Lack of affordable, reliable energy has numerous consequences that may not be on people's radar on a day-to-day basis. But, consider what happens when either electricity or petroleum based fuels are unavailable; life as we have come to expect it is suddenly and jarringly disrupted, with both individual personal consequences as well as larger societal effects. (The aftereffect of "Superstorm Sandy" on New Jersey and New York where electric power and stocked/functioning gas pumps were absent for more than a few days provides a primer on just how significant a lack of energy can be.)

Allowing our energy future to be dependent on resources external to America is completely undesirable. Fortunately, our country is blessed with an advantageously long list of potential energy sources available for development. Clearly, an "all of the above" approach to energy generation and usage has the strategic benefit of ensuring that America has the greatest number of options in guaranteeing its future energy security.

American Competitiveness/Job Creation

Fortuitously, America's desire to maintain a strategic lead in all types of energy is coupled with the fact that doing so will result in positive economic development potential. The need to continue to strengthen our position will serve us well by creating jobs in:

- Research and development to design new products and techniques as well as find new ways to use existing products;
- Manufacturing supply chains, especially of high tech products; and,
- Environmentally sound development of all energy sources available in the United States.

Saving Money

On a more personal basis, energy matters because many people pay energy bills for home utilities and at the gas pump, and are taxpayers who cover the costs of government usages of energy. In fact, the

United States military is the largest single consumer of energy. Any advances that result in lowered use or cost of energy are a huge benefit to the bottom lines of Americans, both as individuals and as citizens represented by the U.S. government. Any funds not used for the procurement of energy can be repurposed to meet other needs or wants.

Environmental Considerations

While the usual prosaic discussions about coal-fired power plant emissions, the potential environmental effects of shale extraction, or the "visual pollution" of wind turbines may come to mind, it is beneficial to think strategically about environmental considerations in a more global frame.

Population Growth

Various estimates of the growth of the world's population suggest that between now and 2050 the world will add the equivalent of two more populations of China (approximately 3 billion in total) to both feed and supply with energy. This is where the relationship between energy and agriculture gets very interesting. While there is currently some arable land that is not being farmed, the amount available is not on a scale that would be sufficient to support that population increase with current technologies and agricultural practices. Consequently, new agricultural research that will allow greater food production with lesser amounts of all inputs, including energy, is imperative.

Water Scarcity

Sufficient water is essential to agriculture as currently practiced. Combined with the other water dependencies of a growing world population demanding a higher standard of living, there is the distinct possibility that water scarcity will be the "trump card" that significantly affects all aspects of future agriculture and energy production/usage. It is

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significant to note that long-range military planners consider water scarcity a major factor.

Energy is a wild card that can either be part of the problem or provide a brilliant solution. Consider the range of possibilities: if a new energy source requires vast amounts of water it contributes to the shortage of water available for other uses, possibly causing conflict with food production, but, a new non-water dependent energy source could hypothetically be used to process brackish water that would ease demand. Other possibilities include new energy saving technologies that would allow agricultural production to be completed with decreased demand for water dependency. New technologies and sources of energy are needed to reduce the costs of food production and distribution.

A Framework for Thinking About Our Rural Energy Future

Rural areas can benefit greatly from the economic development aspects of an “all of the above” approach to both energy sources and uses and the discussion above provides a solid context for regional and local decision makers to consider when faced with energy development decisions. These can range from wind, geothermal, and solar to both purpose grown and agricultural waste feedstock sources, with their resulting need for processing facilities. The diversity of energy sources, including the expansion of renewables and more cost effectively extracted hydrocarbons, could also present potentially unwelcome change in areas that may have remained essentially unchanged for several generations.

Consequently, the ability and effort to evaluate that impact will be key in contributing to well thought

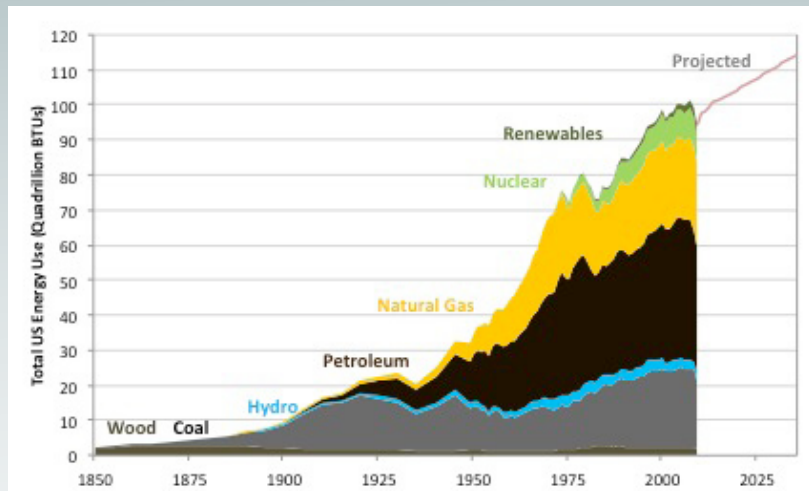


Figure 1. U.S. Energy Use: Past, Present, and Future. Source: U.S. Department of Energy, Efficiency and Renewable Energy.

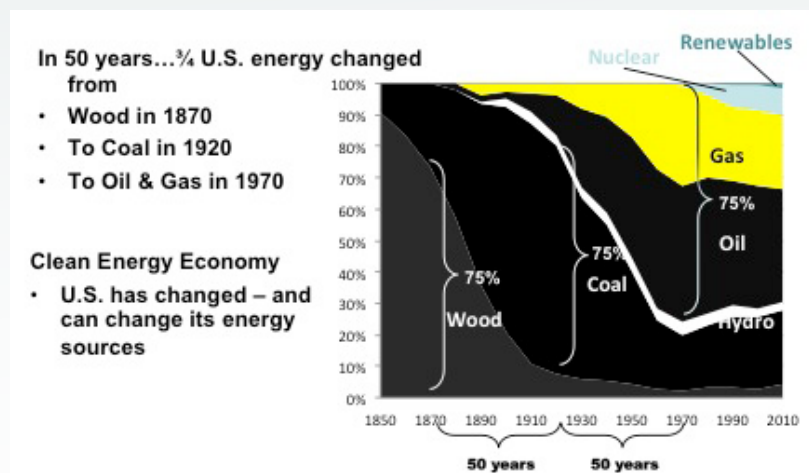


Figure 2. Transformational Change: U.S. Energy Use. Sources: EIA, Annual Energy Review: 2008 and EIA, Annual Energy Outlook: 2009.

out decisions that are consistent with the intent of rural residents. In considering the implications of a proposed energy project it may be useful to employ the “triple bottom line” framework. This looks at the traditional cost/benefit analysis of the monetary factors, but also looks at the social and environmental costs, traditionally known as “externalities.” Often these effects are not easy or even possible to monetize, but a full discussion helps to illuminate the potential trade offs that may be considered. It is also possible that the discussion will result in other alternatives being pursued. Being open minded about considering all the relevancies, can enhance the likelihood of making good decisions about potential development that will have long term effects on a rural area.

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Following are factors that a rural community should think through as they form their responses to proposed energy development:

1. From a holistic perspective, what does the community want? Has it undertaken a structured community wide discussion that intentionally and carefully engaged all citizen groups in a meaningful way? Because rural geographies, topographies, economics and socio-economic circumstances are vastly different, basic energy related interests vary significantly. All should be captured and carefully considered in their entirety.
2. Using the broadest application of all the aspects of the triple bottom line framework, consider how a proposed project will affect the geographic area from a more granular perspective. For example, are the local roads going to be able to support increased traffic, will there be increased pressures on the school system, etc. The goal is to identify and address these effects constructively before decisions are made, using all leverage points available to the community.

Rural residents have varied interests that can be competitive and not easily resolved – Even within a single rural location it is possible that deep and dividing conflicts can arise (e.g., retired residents who moved to the area because of its natural beauty and quietness vs. developer interests that would change the scenic vistas, etc.), so it is best to get these identified and addressed early on, when there may be alternative options.

3. Consider acquiring technical expertise if it is unavailable in the local community. A full understanding of all the implications, both positive and negative, is crucial to a successful implementation.
4. Keep an open mind. Unsurprisingly, new technologies can be confusing and uncomfortable. There is a tendency to think that oil is the only ingredient of our energy palate but consider that petroleum products have only been key to our society for the last hundred years. It is possible to make that kind of shift again and in fact these charts provide an interesting perspective.

America's energy future is bright because we have both broad and deep potential resources. Research is underway that will provide many opportunities for ensuring our energy security, while also reaping benefits from the industries and jobs that will be created. Rural Americans are going to be called upon to play a significant role in this future and they are uniquely placed to be major beneficiaries. By carefully considering their options and making strategically supported choices, rural America can also reduce any potential downside risks by carefully and thoughtfully reviewing what is presented to them, keeping in mind both the “big picture” and considering how their local resources and circumstances fit into that picture. 🌟