

Director's Message

Since the industrial revolution, the utilization of energy from fossil fuels has resulted in rapid economic growth and an increasingly comfortable lifestyle for millions of people. This is especially true in the United States. On a per capita basis, Americans use more energy than anyone else in the world, and have translated extensive

energy use to an extremely high standard of living. For more than two centuries, fossil fuels were relatively inexpensive and they seemed in infinite supply. Much has changed. It is now apparent that fossil fuels are neither cheap nor infinite. Higher costs mean that energy expenditures now take a larger share of the family budget. The implications of \$4.00/gallon gasoline for rural residents who typically must travel great distances to school, the grocery store, church or the doctor's office were extensive. Further, importing foreign oil results in the transfer of massive wealth from the United States to the major oil producing countries, many of whom use oil wealth to maintain non-democratic governments and suppress human rights. In addition, it is becoming increasingly apparent that fossil fuel use results in the emission of dangerous climate changing greenhouse gasses.


Because of these concerns, there are widespread endeavors in the United States to achieve the goal of energy independence and, at the same time, reduce greenhouse gas emissions. Accomplishing these goals will require that we do things much differently than we have done them in the past. In 2007, about 85 percent of the energy consumed



in the United States was derived from fossil fuels (petroleum - 40 percent; natural gas - 23 percent; coal - 22 percent), much of which was imported. Eight percent of our energy was from nuclear power, and only seven percent was from renewable energy sources. Historically, the five major sources of renewable energy have been biomass, water, wind, geothermal and solar. In 2007,

89 percent of the renewable energy produced in the United States came from biomass (53 percent) and water (mostly hydroelectric; 36 percent). Decreasing our dependence on fossil fuels, in general, and foreign oil, in particular, will require a broad spectrum of changes; there is no "silver bullet." One essential change is vastly improved conservation as the impacts of reduced energy consumption could be massive. In addition, it is imperative that renewable energy sources play a much greater role in the future than they play at the current time. In this issue of *Rural Connections*, we highlight efforts by researchers in the West who are working to develop and improve the efficiency of a variety of renewable energy sources. Continuing renewable energy research is vital. The work of these persons and others throughout the world will play a significant role in helping us overcome the major problems that confront us.

It is important to recognize that major transformations in our energy base will have significant economic and sociodemographic consequences. Understanding and reducing these impacts is a major part of rural development. Currently, the West is a primary producer of the fossil fuels that are consumed in this country and this industry employs

thousands of people and contributes millions of dollars to local economies. More than one-half (51.6 percent) of the coal produced in the United States in 2007 was from the 13 states of the western region. Wyoming is the nation's leading coal producing state. Excluding federal offshore oil production, 41.6 percent of the nation's domestic oil is from the western region with Alaska and California being the nation's second and third most important oil producing states. Also, 29.7 percent of natural gas produced in the United States is from the western region. New Mexico, Wyoming and Colorado are among the six most important natural gas producing states in the nation. Obviously, any major changes in the energy industry will have wide-ranging consequences on many western communities. On the other hand, the West has the potential to be a major producer of renewable energy, with the resulting expansion of employment opportunities and other economic benefits. Many rural communities in the West have the potential to reap major benefits by becoming producers of renewable energy. The sun and wind that are so pervasive throughout the West may become major economic assets. An advantage of the sun and wind, compared to fossil fuels, is that these energy sources are truly infinite. 



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