

ASK THE AG TEAM, for the week of December 2, 2007

Wind power in northwest Missouri –by Jim Crawford, *Natural Resource Engineering Specialist, University of Missouri Extension, Atchison County*

With three commercial wind farms either under construction or in operation in Northwest Missouri and several others proposed for the region, people are asking “Why are we looking at wind power?” and “Why are they looking at Northwest Missouri?”

Perhaps the easiest of these questions to answer is why we are looking at wind power. The short answer is \$70.00 a barrel crude oil. We all know that the price of gasoline has gone up dramatically the past couple of years. When the price of oil increases, other energy sources soon follow suit. Natural gas, propane and heating oil are all up in price. As the price of fuels has increased, so have the prices for all the products that use them. One of these “byproducts” is the cost to generate electricity since natural gas is used by many electric generating facilities.

This same event happened in the mid 70’s when we had the fuel shortages and the rationing. At that time, we started looking for alternative energy sources that do not rely on foreign supplies of a non renewable fuel source. Solar, wind, photovoltaic, ethanol, and geothermal energy sources were all explored. They not only had the advantages of being domestic sources of energy, but were also clean, renewable and did not harm the environment. However, when the price of crude oil dropped back to \$35.00 a barrel, work on these technologies stalled as we no longer saw the need for them with oil so inexpensive.

This recent price increase in oil has once again created interest in alternative, renewable energy sources. The technological advances made in these fields in the past 5 years have been staggering. Efficiencies for the various means of collecting the energy have increased greatly and the cost to convert the energy into a useable form (electricity, ethanol, biodiesel) has also been reduced compared to what it was just 5 years ago. Also, these energy sources rely on domestically available products, are renewable and do not have the potential to harm the environment.

When compared to the other alternative energy sources for generating electricity, wind power is currently the least expensive per kilowatt hour to generate. So the answer to the question of “Why wind power?” is that we need to find an inexpensive source of energy that does not rely on a foreign supply of fuel or on a fuel that once used, could potentially pollute the environment.

But why Northwest Missouri? The answer here can also be directly related to changes in technology. Typical tower height for the current generation of large utility-scale wind turbines of 750 KW (kilowatt) to 2 MW (megawatt) rated capacity is 230 feet (70 meters). Also, as a general rule, utility-scale wind power projects using large turbines that service the electrical grid require an average wind speed of at least 15.7 miles per hour as measured at that height.

The original maps that were made in the 80’s showing potential areas for wind generation facilities showed much of Missouri was unsuitable for these facilities. However, new maps made early this century show several areas in Missouri that have the potential for wind power projects with the majority of them located in the northwest region of the state. A wind monitoring program conducted by the Missouri Department of Natural Resources which included the loan of small, monitoring and measuring anemometers, has confirmed several sites in the state that have adequate wind potential. These wind speed maps can be found online at <http://www.dnr.mo.gov/energy/renewables/wind-energy.htm>

Wind is a clean, inexhaustible, domestic energy resource that can generate enough electricity to power millions of homes and businesses. New technologies have allowed us to identify areas in Northwest Missouri that may support this endeavor. As long as the conventional energy supplies stay expensive, we will continue to explore and develop alternative, renewable, domestic energy supplies. After all, as my mother always said, “Necessity is the mother of invention”.