"Wind Can Be a Fickle Resource", *Kansas Country Living*, March, 2007

Incorporating more wind into Kansas' energy mix isn't quite as easy as deciding to flip a switch, according to two energy authorities who spoke at the annual meeting of Kansas Electric Cooperatives in late January.

Wind is not a constant and dependable resource, even in the breezy regions of southwest Kansas, said Bob Johnson, Executive Manager of Engineering & Energy Services with Sunflower Electric Power Corporation.

"Wind generation must be backed up by an equal amount of other generation that is on-line but held in reserve," Johnson said. "Transmission systems are constrained and service is often not available in a timely or cost effective manor."

The main limit is system reliability and a lack of transmission infrastructure.

"We want to bring as much wind energy on our systems as we can," he said, "as long as we don't sacrifice reliability and don't force cost increases on our members."

Sunflower is a generation and a transmission cooperative based in Hays, which sells wholesale power to six distribution member cooperatives in the western third of Kansas.

Johnson cited the Gray County Wind Farm, which has been operating for more than five years near Montezuma, as an example of the "have" and "have not" story of wind power.

The largest wind farm in Kansas, it features 170 giant turbines with a generating capacity of 110 megawatts. That's enough electricity to power 33,000 homes.

The difficulty, Johnson said, is that potential is rarely reached.

Based on figures from 2005, 32 percent of the time the wind farm produced less than 11 megawatts, which would be 10 percent of its rated output. What's more, 66 percent of the time it produced less than 55 megawatts, or 50 percent of its rated output. Surprisingly, 18 percent of the time, the farm produced virtually no energy. That's equivalent to more than one and one-fourth days each week.

"You could, therefore, say that only 34 percent of the time was it at greater than 55 megawatts, or one-half of rated capacity," he said.

"Overall, on the average, its output is approximately 36 megawatts, or about one-third of its rated capacity."

Les Evans, Vice-President of Power Supply for Kansas Electric Power Cooperative (KEPCo), discussed wind power on a smaller scale.

Instead of commercial production, like that found in Gray County, Evans spoke of the pros and cons of community wind-projects established on a level to benefit specific local regions.

“Community wind,” he said, “stimulates the local economy, promotes renewable energy, keeps investment dollars local, and builds a new industry.”

A drawback, he added, is a cost of more than $1 million per megawatt. “The questions is who pays and who participates?” he asked.

KEPCo, like Sunflower, is a generation and transmission cooperative that supplies power to cooperatives in the eastern two-thirds of Kansas.

While KEPCo would like to add more wind to its energy mix, the cost is a factor.

Hydropower, coal and nuclear are cheaper, he explained. Those resources cost KEPCo from 1.5 to two cents per kilowatt-hour in base energy charges. Wind power, on the other hand, costs between four and five cents per kilowatt-hour. Additional costs of three to five cents per kilowatt-hour for principal, interest, taxes, insurance, and transmission are then added to figure the amount KEPCo charges its member cooperatives.