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UPDATE

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As Wind Power Usage Grows, Wind Farms Expand

On his 120-acre farm in Minnesota, Richard Peterson harvests crops of corn, soybeans and, since 2005, wind. His turbine is just one of 67, all housed on adjoining farmland, that make up a wind farm capable of generating 100 megawatts of power.

That's enough energy to power 30,000 average American homes -- and it's part of a growing trend toward larger wind farms.

Wind power is the second most rapidly increasing source of energy in the United States, trailing only behind natural gas. As wind power becomes a more significant presence, the size of the farms and the turbines themselves are also growing.

According to the American Wind Energy Association, wind power construction accounted for almost 30 percent of new electricity generating capacity in 2007, while just five years prior in 2002 it was less than 1 percent.

The wind turbines are also growing more powerful. The average turbine installed in 2007 is capable of generating almost twice as much energy as the average turbine installed in 2000, according to the association.

A report released in April by the Worldwatch Institute found that the United States was on track to surpass Germany as the world leader in capacity to generate wind power, a milestone Chris Flavin, president of Worldwatch, estimates was reached late in 2008.

The Horse Hollow Wind Energy Center, the largest U.S. wind farm currently in operation, houses 421 turbines and is capable of generating 736 megawatts of power, enough to power more than 220,000 homes.

But Somnath Baidya Roy, a professor of atmospheric sciences at the University of Illinois, points out that although wind energy use is growing quickly, fossil fuel use is growing even more quickly. Wind is growing at an estimated 20,000 megawatts per year while fossil fuel use is growing at an estimated 3,000,000 megawatts per year.

"Wind power can be part of the solution to the global energy problem, but to be a meaningful solution we have to make a drastic increase in production," he says, adding that he can envision a time when wind farms may not hold hundreds of turbines, but thousands.

Roy recently completed a study that simulated the effects of a 10,000-turbine wind farm. "Wind farms are getting larger and they should," he says. "The larger the farms and the larger the turbines, the more power we capture. We have to keep on doing that."

But Roy theorizes that a wind farm of thousands of wind turbines might increase the amount of air turbulence in the area, potentially affecting the amount of wind power an individual turbine draws in, a problem he suggests could be solved by taking this increased turbulence into account when designing wind farms.

Mark Ahlstrom is CEO of Windlogics, a company that consults with wind power companies to design wind farms for maximum efficiency in energy gathering. Among the factors Ahlstrom takes into account when choosing locations and designing the setup for wind farms is wind turbulence in the area and how to position multiple turbines.



"We look at turbulence right now when planning wind plants. We're very careful when laying out turbines to place them in a way that optimizes outputs," says Ahlstrom. Of turbulence generated by turbines themselves, Ahlstrom says that effects tend to be insignificant.

A more immediate challenge to the growth of wind farms is presented by the worsening global economic climate.

"If you would talk to virtually any wind company, for things that haven't been fully financed there are problems to overcome," says the Worldwatch Institute's Flavin. "It hasn't yet shown up in the overall statistics because there were so many projects already in the pipelines. But, I think what you're going to see now is that things will start to slow down unless there are effective responses to problems in the market place."

Among the measures that have already been taken to preserve the steady growth of the wind power industry is a federal production tax credit, in place since 2005, that offered a tax incentive for producers of wind power.

Christine Real de Azua, spokesperson for the American Wind Energy Association, attributes at least some of the recent growth in wind farms to the extension of this credit through the end of the year.

"The fact that (the tax credit) has been extended through December 2009 has certainly helped with growth," says Real de Azua.

Flavin is optimistic that, even as the economy struggles, wind power can continue to grow. He cites the increasing political will towards growing alternative energy sources, as well as an interest in the new employment opportunities opened up by wind power.

"One of the new dynamics is a greater realization of the jobs that can be grown," he says. "Earlier, this was seen as an environmental thing, that's now shifted so that there is a strong economic motive. If anything, the recession increases that. States are going to be looking to not just pay for what they have but also to grow."

For Richard Peterson, the economic benefits of wind power have already been felt on his farm. Says Peterson of the turbine that stretches 384 feet over his fields, "Its extra income that wasn't on my farm before that's coming in, and it all helps out."

---- **By Ria Misra, Special to the Online NewsHour**

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