

Wind Farms May Not Lower Air Pollution, Study Suggests



Stephen Savoia/Associated Press

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WASHINGTON, May 3 — Building thousands of wind turbines would probably not reduce the pollutants that cause smog and acid rain, but it would slow the growth in emissions of heat-trapping gases, according to a study released Thursday by the National Academy of Sciences.

The study found, however, that officials who will decide whether to build the turbines have few tools to measure the devices' impact on air quality, on animals like birds and bats, and on wilderness preservation.

In fact, making good decisions about wind energy may be difficult, said David J. Policansky, the study director, because negative effects occur locally while benefits are probably regional or national.

The report observed that unlike European countries, “a country as large and geographically diverse as the United States and as wedded to political plurality and private enterprise is unlikely to plan for wind energy at a national scale.” But it said

developers and local officials got little federal guidance about how to make such decisions.

Even the scale of local damage from wind farms is unclear. Bats and raptors are thought to be the animals most threatened by wind turbines because they reproduce more slowly. But scientists base estimates on fairly primitive methods, like counting animal carcasses nearby and hoping that few have been carried off by animals, said Paul G. Risser, chairman of the academy's study.

"If 100 bats are killed, we don't know whether that's 100 out of 10 million or 100 out of 100 million," Dr. Risser said.

And researchers do not know whether newer windmills, which have huge blades that rotate slowly, are any safer for birds and bats than older models, which spin more like airplane propellers.

Wind machines can displace power from coal and make electricity without sulfur dioxide, which causes acid rain, and without nitrogen oxides, which add to smog. But the study said they would not reduce the total output of those pollutants because there was already a cap on sulfur emissions and one on nitrogen oxides was likely to follow.

Wind power could also reduce coal-plant carbon dioxide, which is thought to cause climate change, but the impact may be small, the report said. By 2025, wind turbines could cut carbon dioxide output by 4.5 percent compared with what it would otherwise have been, but this "would only slow the increase," said Dr. Risser. "It wouldn't result in a decrease in the amount of CO₂."

The study relied on an Energy Department projection that in the next 15 years, onshore wind capacity would range from 19 to 72 gigawatts, or 2 percent to 7 percent of the nation's generating capacity. The actual impact would be smaller, however, because wind machines run fewer hours than coal or nuclear plants.

Wind output quadrupled from 2000 to 2006, but wind turbines still produce less than 1 percent of the electricity used in the United States. And the amount of wind energy that can be integrated into the electricity grid is limited, the researchers said. The maximum that could be accommodated, Dr. Policansky said, is probably 20 percent of the nation's electricity use.