

BRIEF ANALYSIS

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Wind Power: Red Not Green

by H. Sterling Burnett, Ph.D.

Environmentalists have long argued that renewable energy sources (such as wind, solar, and geothermal power, and the burning of biomass), are preferable to fossil fuels (oil, natural gas and coal). Historically, fossil fuels have been relatively abundant and significantly less costly; however, in recent years the price of alternative energies, particularly wind power, has fallen. Under certain conditions, wind power has become cost competitive with conventional fossil fuel energy. In addition, alternative energy advocates claim that burning fossil fuels pollutes the air and emits greenhouse gases that many people argue are causing potentially catastrophic global warming. Renewable energy promoters claim that wind power is cheap, safe and “green.” These claims are untrue.

Wind Power on the Rise. The price of wind-generated energy fell more steeply than any other energy source over the past 30 years. Indeed, the cost of wind power fell from approximately 25 cents per kilowatt hour (kwh)

in the early 1980s to between 5 cents and 7 cents per kwh (adjusting for inflation) currently in prime wind farm areas. Wind advocates argue that a new generation of turbines will bring the cost down below 5 cents per kwh — which is competitive with conventional fossil fuels for electricity generation.

Wind power, currently less than 1 percent of the U.S. power supply, could double its share within 10 years. The American Wind Energy Association has optimistically projected that wind power could provide as much as 6 percent of the nation’s energy by 2020.

Wind Power in the Red. While the price of wind power has indeed fallen, it still costs more than spot market electric power (3.5 to 4 cents kwh). Further-

more, the price gap between wind and conventional power production is actually greater, since the federal government subsidizes wind power through a production tax credit of 1.8 cents per kwh. Wind power plants also receive accelerated depreciation, allowing owners to write off their costs in five years rather than the usual 20. These subsidies, along with several states’ legal requirements that utilities provide some energy from cleaner power sources, account for most and perhaps all of the recent growth in wind power.

Thus, when the 1.8 cent kwh tax credit lapsed in 2003, new wind power projects suddenly became uncompetitive. As a result:

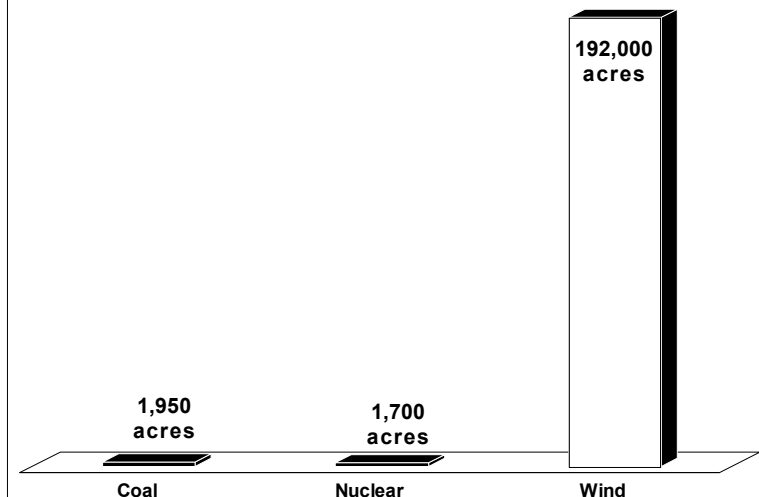
- California’s Clipper Windpower abandoned already approved plans to build 67 windmills in Maryland.
- As of January 8, 2004, orders for wind towers from the builder Beard Industries ground to a halt, costing the company 200 jobs.
- Vestas Wind Technologies shelved plans to build a manufacturing plant in Portland, Ore.
- More than 1,000 megawatts of wind power that would have been added in 2004 will not occur due to the expira-

tion of the tax credit, according to the American Wind Energy Association.

Wind Power Equals Blight. Wind power’s environmental benefits are usually overstated, while its significant environmental harms are often ignored.

Despite industry claims, promised air quality improvements have failed to materialize. Because wind is an intermittent resource, wind farms must rely on conventional power plants to back up their supply. Wind farms generate power only when the wind is blowing within a certain range of speed. When there is too little wind, the towers don’t generate power; but when the wind is too strong, they must be shut down for fear of being blown down. And even when they

Footprint of a 1,000 Megawatt Powerplant



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function properly, wind farms' average output is less than 30 percent of their theoretical capacity.

Bringing a conventional power plant on line to supply power is not as simple as turning on a switch; thus most of the fossil fuel power stations required to supplement wind turbines are not "redundant," but must run continuously, even if at reduced levels. When combined with the CO₂ emitted and pollutants released in the manufacture and maintenance of wind towers and their associated infrastructure, substituting wind power for fossil fuels does little to reduce air pollution.

Wind farms are also land-intensive and unsightly. In Europe, wind power is growing at an even faster rate than in the United States. *Wind Power Monthly*, the British magazine for wind industry enthusiasts, has reportedly recognized that wind power's popularity is decreasing due to the industry's portrayal of wind farms as "parks" in order to trick their way into unspoiled countryside in "green" disguise. Wind farms are more like highways, industrial buildings, railways and factory farms. Often, the most favorable locations for wind farms also happen to be the current location of particularly spectacular views in relatively unspoiled areas.

Wind farms that produce only a fraction of the energy of a conventional power plant require 100 times the acreage. For instance:

- Two of the biggest wind "farms" in Europe have 159 turbines and cover thousands of acres; but together they take a year to produce less than four days' output from a single 2,000 MW (million watt) conventional power station — which uses one percent as much space.
- A proposed wind farm off the Massachusetts coast would produce only 450 MW of power but require 130 towers and more than 24 square miles of ocean.
- A comparison of "footprints" is telling: to produce 1,000 MW of power, a wind farm would require approximately 192,000 acres, or 300 square miles; a nuclear plant needs less than 1,700 acres, or 2.65 square miles (within its security perimeter fence); and a coal powered plant takes up about 1,950 acres, 3.05 square miles. [See the figure.]

In addition, regular wind-tower maintenance requires miles of paved roads, increasing runoff and reducing soil moisture absorption. The damage to

wildlife habitat is often greater than that from technologies associated with conventional fossil fuels.

Wind Power versus Birds and Bats. The most publicized environmental harm caused by wind power may be its effects on birds and bats. Wind farms must be located where the wind blows fairly constantly. Unfortunately, such locations are often prime travel routes for migratory birds, including protected species like Bald Eagles and Golden Eagles. The Sierra Club labeled wind towers "the Cuisinarts of the air." Why?

- Scientists estimate as many as 44,000 birds have been killed over the past two decades by wind turbines in the Altamont Pass, east of San Francisco.
- The victims include kestrels and red-tailed hawks, and — since the area is home to the largest resident population of golden eagles in the lower 48 states — an average of 50 golden eagles each year.
- One study shows even more problems, explaining, "Wind farms have been documented to act as both bait and executioner — rodents taking shelter at the base of turbines multiply with the protection from raptors, while in turn their greater numbers attract more raptors to the farm."
- Further, at least 400 migrating bats, including red bats, eastern pipistrelles, hoary bats, and possibly endangered Indiana bats, were killed at a 44-turbine wind farm in West Virginia in 2003.

Bird kill is also a problem in other countries. At Tarifa in Spain, the site of 269 wind turbines, thousands of birds from more than 13 protected species have been killed.

Lawsuits may prevent the expansion of wind farms in West Virginia and California, and the construction of wind farms off the New England coast. Indeed, the lead scientist for the Audubon Society called for a moratorium on new wind power development in bird-sensitive areas — which include most of the suitable sites for construction.

Conclusion. Wind power is expensive, doesn't deliver the environmental benefits it promises and imposes substantial environmental costs. Accordingly, it does not merit continued government promotion or funding.

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