



Good intentions, bad results

Wind power doesn't live up to its hype

BY LARRY KAUFMANN

If you listen to supporters, wind power is almost a miracle. They claim wind is an inexhaustible free resource, which makes it a cost-effective and endlessly renewable means of generating electricity. Because wind turbines don't use fossil fuels, they also argue that wind power is cleaner and better for the environment than other technologies.

With equal emphasis, the advocates tout wind power as an engine of economic development in Wisconsin, pointing out that it's one of the fastest-growing industries in the state, with 200 businesses and as many as 12,000 jobs now tied to the sector. It's no wonder that a January 2012 survey found that 85% of Wisconsin residents support greater use of wind power.

Affordable energy, more jobs and less pollution: What's not to like?

Well, plenty. Wisconsin's economy relies on cost-effective and reliable energy supplies, and wind power is neither. More surprisingly, wind power is not especially "green," and it may do even more environmental damage than conventional electricity generation.

Consider, for example, how devastating wind power is to wildlife. Critics have called wind towers "Cuisinarts of the air" because of their impact on birds. The U.S. Fish and Wildlife Service estimates that wind farms kill 440,000 birds each year. One peer-reviewed study put the number at 583,000, including 83,000 birds of prey such as eagles, falcons and hawks. Many

of these species are protected under the federal Migratory Bird Treaty and Bald and Golden Eagle Protection acts.

But not to worry.

The wind power industry has effectively been exempted from these environmental protection laws. This differs dramatically from how the federal government applies the same laws to other energy companies. For example, in 2009, a large electric utility in the Northwest paid \$10.5 million in fines when 232 eagles were electrocuted through contact with the company's power lines and substations. And BP was fined \$100 million in 2010 because of the impact of the Gulf oil spill on birds.

After a wind power company was fined (for the first time) for killing birds in November 2013, the Obama administration quickly announced that wind generators would be exempt for 30 years from prosecution for killing eagles. The legal double standard on wildlife protection constitutes a wind power subsidy. If the law were applied neutrally, the industry would be potentially subject to millions of dollars of fines every year.

Fact is, subsidies are the lifeblood of the wind power industry.

The 1992 Energy Policy Act created a federal Production Tax Credit on wind power development. Before it expired at the end of 2013, this credit provided over \$20 billion in subsidies to developers. The Obama administration's 2009 stimulus package also distributed more than \$3 billion in grants to the wind power industry between 2009 and 2011.

In Wisconsin, wind power has been driven by the state's Renewable Portfolio Standard approved in 2006. The standard requires 10% of electricity to come from renewable sources by

2016. According to a June 2012 report from the Wisconsin Public Service Commission, 97% of the generation capacity installed in response to the standard has been wind-powered.

A requirement to provide essential services like electricity in a desired way will certainly create jobs in the government-favored industry, but that doesn't make it good economic policy. Suppose lawmakers decided that 10% of every Wisconsinite's personal energy needs — also known as calories — had to be fulfilled by eating ice cream. This policy would be a tremendous

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boon to Wisconsin's dairy industry and create ancillary jobs in ice cream manufacturing, distribution and retailing.

Of course any state mandate creates employment in the mandatory activity, but it also diverts resources away from industries where consumers would otherwise voluntarily spend their money and investors would place their capital.

In the electric power industry, this means the Renewable Portfolio Standard is diverting investments away from other, alternate methods. The preferred generation technology in recent years is what is known as a combined cycle plant fueled with natural gas. The PSC estimates the total cost of a new, combined cycle generator in Wisconsin is \$0.061 per kilowatt hour. In

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contrast, the PSC's estimated cost of a new wind power plant is \$0.11 per kilowatt hour. Wind power is therefore nearly twice as expensive.

Being required to use more expensive wind power raises electricity prices for Wisconsin consumers and businesses. These higher prices reduce residents' purchasing power, and less spending by customers and businesses ultimately means less employment and fewer jobs in the state.

In fact, the Beacon Hill Institute at Suffolk University estimates that in 2016, the RPS will raise electricity prices by 3.4% and lead to a loss of 1,780 jobs, which is the opposite of the job-generating claim of wind power proponents.

The Beacon Hill study also understates RPS costs since it does not include the costs of the additional transmission needed to connect new wind generation to the grid, which are substantial. The trade association for U.S. investor-owned utilities estimates that, nationally, utilities will spend \$61 billion on new transmission projects between 2010 and 2021. About \$40 billion of this is required to connect wind and renewable power, which amounts to over \$120 for every person in America.

It's also worth noting that 85% of Wisconsinites support greater use of natural gas for electricity generation. This is identical to the share of residents (from the same survey) who favor wind power. If utilities were not required to procure 10% of their electricity from wind and other renewables, they would overwhelmingly choose more cost-effective — and equally popular — gas-fired generation instead.

Wind power is also notoriously unreliable. Windmills generate electricity only when the wind is blowing at sufficient speeds. This occurs intermittently — and unpredictably — on any

given day. This is apparent to anyone who has ever driven past a wind farm: Seeing the propellers on wind towers standing still is just as common as watching them rotate in the wind.

This commonplace observation has powerful implications, which wind power advocates rarely mention. Simply put, the unreliability of wind generation means it will never fully replace conventional generation sources like coal, nuclear or natural gas.

Wind power is nearly twice as expensive as the next-best alternative technology.

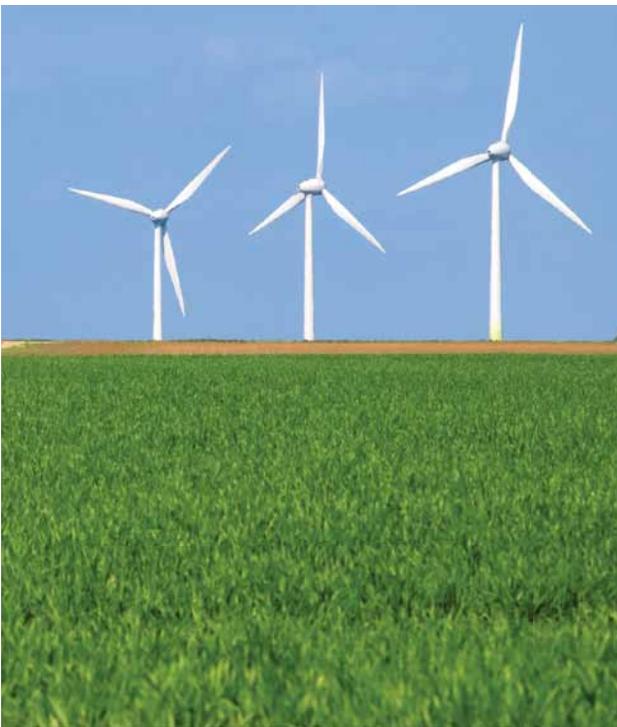
The reason is that electricity cannot be stored (with very rare exceptions), so consumers' fluctuating demands for power have to be matched minute-by-minute with changes in the amount of electricity supplied. Every time a customer flips a switch, a generator attached to the grid has to ramp up production ever so slightly to keep the electricity flowing to this new demand for power.

Because windmills generate electricity irregularly and unpredictably, utilities cannot rely on them to meet customers' fluctuating power demands. Indeed, wind power tends to be least available at the times it is needed most — on hot, muggy days, when the demand for power is at its peak because people turn up their air conditioners. These are also typically days when the wind is still and windmills are also taking a break.

Wind's lack of reliability also undermines its environmental benefits. Conventional generation must remain running to smooth out unexpected changes in wind-generated power. These irregular adjustments cause fossil generators to operate less

efficiently than if wind power were not attached to the grid. This leads to more output at fossil fuel generators and more production of greenhouse gases.

At least one study shows that wind power can actually increase greenhouse gas emissions, depending on the mix of generation attached to the system. This will not be the case if nuclear



generation is used as the backup generation source for wind, because nuclear power plants do not create any greenhouse gases.

For that matter, if the objective is minimizing greenhouse gases, nuclear power is clearly more effective than wind power. This doesn't mean that nuclear power doesn't have its own challenges with the disposal of nuclear waste (or allowing it to be reprocessed). But nuclear is still unquestionably superior to wind for generating large amounts of reliable, carbon-free electricity.

Wind power has other environmental drawbacks. While the wind is inexhaustible, wind generation requires copious amounts of the ultimate scarce resource: land. Windmills also

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harm scenic viewsheds and usually require miles of transmission lines through rural areas to move power to population centers. Windmills located near houses often lead to noise complaints, and some studies suggest they can even create health issues.

All things considered, the case for wind power is remarkably weak. The wind power industry has grown fat on subsidies and mandates and in return provides an expensive and unreliable source of electricity. And as I've detailed here, its "green" credentials are suspect.

Even the most ardent climate change Cassandras should be wary of wind power. There's nothing it can do to reduce greenhouse gases that nuclear power can't do better. Solar energy also avoids many of wind power's problems, although it is obviously more suitable for sun-drenched states like Arizona than wintry Wisconsin. For anyone looking for clean, affordable electricity, the answer isn't blowing in the wind. ■

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