



CyberSpeak
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Just because it's 'green' doesn't mean it's smart

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When it comes to energy, I'm a big believer in some things that make me enemies. I believe in alternative fuels because it's just plain stupid to be as dependent as we are on oil. Solar, nukes, wind, hydro, biodiesel, what

have you — we need to look and use all of them.

I don't believe in conservation as public policy, though. I think it's great if you do it to save money or help keep the Earth clean (I certainly do), but I think that the better long-term solution is to find more energy, not to use less.

I think we should get away from the idea of a dangerously unstable giant electric grid and focus on local power — as local as possible, down to the individual-home level.

I think there should be huge tax rebates for installing solar panels or windmills or other clean energy sources that reduce your dependence on the grid. I think we need to design and develop more nuclear plants based on safer designs. (And yes, I believe there can be safe nukes.) And I think trying to create a hydrogen-based energy economy is a stupid idea.

See? Chances are you hate me and want to write to tell me how wrong I am. Feel free.

What drives me nuts, though, are ideas that *sound* smart and green, but in reality are not. They take our focus away from the real ways to get more, cleaner, renewable energy before it's too late.

Corn-based ethanol is one of those things, but I've written about it before. The cost in fuel, water, time, and chemicals to grow and harvest the corn, then turn it into ethanol wipes out any benefit it provides. (There's more hope for biodiesel and sugar-beet ethanol, but that's another story.)

Then there's wind. Conventional wisdom seems to think that wind energy is clean and cheap, although it poses a host of problems for birds and bats. To be productive, the windmills need to be located in windy areas (duh), but that's just where birds tend to migrate through.

But there are bigger problems with wind energy than simply dead birds or ruined scenery.

Say watt?

First off, when a company is looking to install a wind farm, it tends to talk about it in terms of megawatts — the amount of energy it can produce. The rule of thumb the energy industry uses is that producing 1 MW continuously could provide electricity for about 1000 homes.

Three key words from that paragraph: "can produce" and "continuously."

If someone speaks of a 50-MW wind farm, he's talking about what's called *nameplate capacity* meaning the amount of energy it can produce — not the amount it will always generate. (Yes, physics folks, I know. It doesn't "produce" energy. It just transfers it from one form to another.)

So if a company says it's going to build a 50-MW wind farm in your town, and the local paper says "50 megawatts is enough energy to power 50,000 homes," that's only if A) the wind is always blowing, or B) those homes don't need electricity all the time.

In reality, a wind farm will only generate a fraction of its nameplate capacity. In some places, the wind might only blow enough 30% of the time. At that point the farm might produce 50 MW. Other times... not so much.

To understand why this is a bigger problem, think of it on a small scale. Let's say you had a windmill generating electricity for your home. When the wind is blowing, all is well, but when it stopped you would need to supplement it.

You would also need to get that supplemental power source running on virtually a moment's notice, and most power plants can't ramp up very quickly. One that can is one powered by natural gas. And natural gas is one of the most expensive ways to generate electricity.

On the larger scale, if you add a lot of wind-generated electricity to the grid, that's great... if the wind blows. But the peak month for electricity usage is August, which just happens to be the month when the wind doesn't blow. So the inexpensive electricity poured into the grid is offset by the expensive natural gas that needs to supplement it — the industry phrase is "maintain the base capacity."

So green isn't always green.

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One big happy grid

Besides the thought of cheap, green energy added to the system, many people like the idea of having a wind farm in their region because they think it will bring economic benefits. Unfortunately, it probably won't.

First of all, if a wind farm goes up in your town it doesn't mean that you'll get your power from it. Not at all. The electricity it generates wouldn't come to your home; it goes into the grid. The company that owns the generators can sell the electricity to buyers anywhere on the grid.

No generator supplies a specific company; the entire region shares a single pool that gets its electricity from all sorts of producers, green and otherwise.

Think of it as a lake. Various springs pour water into it, and people take water out of it. It's meaningless to ask where that glass you're drinking comes from; it's a single source. So too with electricity.

As Ray Dotter, a spokesman for PJM, the organization that manages the electric grid for much of the Northeast and Mid-Atlantic, told me, "You just measure how much someone puts in and how much someone takes out. The rest is just bookkeeping."

So from an economic standpoint, having a local wind farm means little. It's like having a factory in town that employs only a handful of people and then ships its products other places. Local benefit: virtually nil.

Which gets back to my feeling up top: Local energy through smaller grids is the way to go. Not only would communities have more at stake from their energy decisions ("If we want cheap power we need to build 500 windmills or one nuke, or else go with coal"), but it would reduce everyone's reliance on a huge, unwieldy network that only needs a few fallen trees to take it down.

Andrew Kantor is a technology writer, pundit, and know-it-all who covers technology for the Roanoke Times. He's also a former editor for PC Magazine and Internet World. Read more of his work at kantor.com. His column appears Fridays on USATODAY.com.