

COMMUNITY ADVISORY BOARD — No green purpose

By **John Barwis**

Community advisory board

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Holland, MI — Wind-generated electricity has great allure, touted as resuscitating Michigan's weakened manufacturing base and softening the environmental impact of coal-fired power plants. How could any clear-thinking politician not support this idea? Indeed, why would any concerned citizen resist such benefits? Considering the greater good, shouldn't we be willing to tolerate some dead birds and angry NIMBYs? Won't installing wind turbines decrease emissions of ash, sulfur and nitrogen, heavy metals, and CO₂? Won't we enjoy health benefits, and be doing our part to "save the planet"? Well actually, no.

Fluctuations in wind speed cause variations in electrical yield from wind turbines, and these variations do not match electricity demand. So no matter how many windmills are installed, conventional power plants must provide 100 percent backup capacity to avoid power shortages. These backup plants must ramp their output up or down to offset daily or hourly changes in wind speed. That would not be a problem except that changing the output of a fossil-fuel generation system has a negative impact on its efficiency and lif span. When running below optimal output, they burn more fuel per unit of electricity generated. At some level of efficiency loss, the extra fossil fuel consumed becomes greater than the fuel saved from using wind turbines.

This is the so-called "turning point," where the reduction in CO₂ emissions becomes zero. Dutch scientists de Groot and le Pair calculate that the turning point can occur at an efficiency reduction of only 2 percent. See www.clepair.net/windefficiency.html.

What kinds of efficiency losses occur in fossil-fuel systems where significant wind turbine capacity has been installed? In Germany, for many years the primary source for electrical energy has been coal-fired plants, more recently supplemented by natural-gas turbines. Having mandated large-scale application of wind energy, by 2007 Germany had installed 23 gigawatts of wind-turbine capacity, the equivalent of 30 to 40 conventional power stations. From 2000 to 2007 these wind turbines delivered an average of only 17.5 percent of their design capacity due to changes in wind speed. Their daily output varied from 0.2 to 38 percent of the total electricity consumed. To protect against fickle winds Germany uses gas turbines to back up their wind turbines.

The problem is that open-cycle gas turbines, which can be ramped up and down relatively quickly, are less fuel-efficient than coal-fired plants (35 percent vs. 55 percent). So when the gas turbines kick in, the average fuel consumption of the whole system increases. De Groot and le Pair calculate that when efficiency drops from 55 percent (coal-fired plants with no wind) to 45 percent (coal and gas plants both in use), wind generation causes more CO₂ to be produced than would be emitted by a coal plant alone and working at full efficiency. On top of that are extra capital costs and the fossil-fuel energy needed to build wind-generation sites, as well as additional high-tension lines necessary to connect them to the grid. These contribute additional CO₂. See www.clepair.net/windsecret.html.

Furthermore, Bentek Energy LLC has analyzed the effect of wind turbines on air pollution and CO₂ emissions in Colorado and Texas using data submitted to the Environmental Protection Agency by the power generating companies. Results show that sulfur and nitrogen pollution actually increased significantly after wind turbines came into operation, while CO₂ emissions increased in Colorado and reductions were minimal if not zero in Texas. See www.bentekenergy.com/WindCoalandGasStudy.aspx

An astute supplier of fossil fuels to Michigan's power plants would be smart to lobby for as many wind farms as possible. If you are concerned about pollution or your CO₂ footprint, you should not be supporting wind-generation initiatives. The answer for many decades has been nuclear power, and it is inevitable we will move in that direction.

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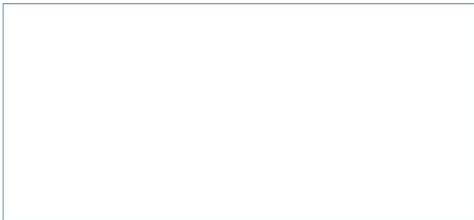
Comments (9)

JDL

22 hours ago

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Report Abuse

All I know is that the way we currently do things isn't working, so I'm open to trying something new.

As a side note, it does not surprise me in the least that someone who used to work for Shell isn't advocating green energy. As for his sources, well, you can find data to back up anything - and I'm sure there will be lots of comments linking data that proves wind-power is clean, efficient, and the solution to world hunger.

Hard to believe anything on the internet these days...

Jim Sanders

22 hours ago

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No bias here, I'm certain.....

adutchguy

21 hours ago

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Finally, a factual driven piece on energy and the problems associated with the different types of energy. Thank you for the facts and for the logical conclusions. There wasn't even any lambasting of political figures or parties. What an unusually pleasant style to read.

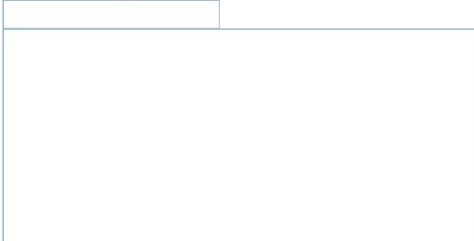
Having said that, I propose the glitches of balancing wind with gas turbines be addressed rather than surrendering the concept entirely. This does not mean I oppose nuclear energy, but that wind energy still has great potential.

BjornJohnson

18 hours ago

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Bias from a statistical perspective doesn't disprove truth, just delays finding out what it is.

So bias or not, voluminous sources of refutable data or not, I think a practical discussion about nuclear power is long-overdue, especially since there are already 2, shall we say, 'well-aged' nuclear plants within ~50 miles of here. Even if you want to go the Chicken Little route with atomic energy, you'd then have to admit that the sky has been falling for a long time while in close proximity to our homes and we seem to have managed ok. Although I did notice I am growing a 6th toe on my right foot...

(Irradiated) Food For Thought:

How does a Shell shareholder or retiree benefit from proposing atomic energy anyways?

He doesn't.

Today's stock tips:

SELL: RDS

BUY: GE, ETR and EXC

Mike G

16 hours ago

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Report Abuse

Good article, you lefties would believe the world is flat if BO told you it was. Dispute it if you can, but I doubt that you can.

timeno

10 hours ago

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mike g, fyi, some of us 'lefties' are actually rather disappointed in mr. obama. we dont worship the ground he walks on or agree with everything he says and does. thinking we are nothing but a bunch of syncophants just shows how narrow minded you are.

dobo

3 hours ago

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There have been a number of people who when this subject comes up try to explain why wind energy is not a solution to our energy problems. Such a negative response to what appears to be such a attractive solution is difficult for some to swallow. Nevertheless, I hope enough people will understand the truth of the matter before we go off the deep end on wind energy. Wind energy would be good for specific off- the-grid uses like charging batteries or pumping water to an elevated lake like Consumers does with their nighttime excess power near Ludington. Thank you Mr. Barwis for a good article.

adutchguy

2 hours ago

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Mike G

I saw an article in The Sentinel about a Civil War reenactment. I think you should read it and blame the Civil War on lefties. I also read some roads will be closed while filming takes place. Another leftie conspiracy.

Good lord, Mike, please post your political hooliganism with the appropriate articles.

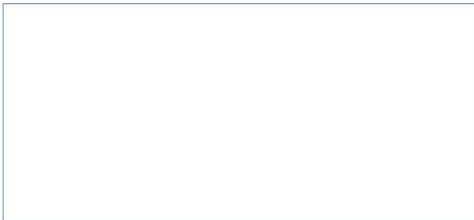
JBarwis

53 minutes ago

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JDL,

I think you missed two points of the article, and suggest you re-read it.

Point One: If a source of electrical energy causes an increase on CO2, Nox and Sox - regardless of whether it is itself the emitter, then it actually aggravates the situation despite appearing superficially harmless.

Point Two: You have your vested-interest suspicions precisely backwards. It is to the distinct advantage of people who are in the natural exploration and production business to push for construction of more wind farms, not fewer. This is because they will sell more natural gas to supply the backup gas-turbine generators.

The Sentinel did not have enough room to print the data sources for my article, so I will give them here. A few ancillary facts for those interested in electrical energy generation. For 2008 (the most recent year for which data are available), according to the U.S. Department of Energy:

Oil-burning plants supply only 1.12% of U.S. electricity.

Natural-gas turbines supply 21.43% of U.S. electricity.

Source: <http://www.eia.doe.gov/cneaf/electricity/epa/epates.html>

The Bentek report on wind-generated electricity in Colorado and Texas can be downloaded in its entirety at: <http://www.bentekenergy.com/WindCoalandGasStudy.aspx>

The Dutch studies on wind generation in the Netherlands and Germany can be found at:

www.clepair.net/winefficiency.html

www.clepair.net/windsecret.html

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