

Arthur Hooton

How many wind turbines will it take?

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If you think your electric bills are high now, prepare for sticker shock if Gov. Manchin's Alternative and Renewable Energy Portfolio Act sees the light of day.

The governor's assertion in his State of the State address on Feb. 11 that "West Virginians know energy better than anyone" is belied by his woeful ignorance of wind power's limitations. He seems all too eager to sacrifice the glorious vistas of the Mountain State - as well as the tourism, recreation and vacation home building industries dependent on those unfettered, forested ridges - to posture himself as a forward-thinking, environmentally minded political leader.

Instead what he has done is to have swallowed whole the baloney sandwich served up by the wind industry, and he now asks the Legislature to follow suit. Wind turbines do create energy; they do not create much useful power. Forcing power companies serving West Virginians to obtain 10 percent of their electricity from wind turbines by 2015 will not alter the reality of wastefully expensive and inefficient investments to achieve that goal, if it can be achieved at all.

Wind turbines are inefficient. They produce energy intermittently. The industrial wind facility in Tucker County operated at 27 percent of its rated capacity in the last year that records were available. Worse yet, the constantly fluctuating energy entering the transmission lines must be balanced by an alternate, dispatchable energy source, such as gas-fired generators running in standby mode. As a consequence, the more we rely on intermittent generators to supply electricity, the more balancing capacity we need, reaching a point where the added units, be they gas or coal, will be like tugboats tied to docks, engines idling, waiting for calls to rescue the suddenly becalmed, wind-powered sailing freighters the government has required. The supposed carbon savings from using sailing vessels would be severely compromised by the need for all that engine-idling.

A 27 percent average annual output of energy by wind turbines is dismal, but there's more bad news. The PJM grid operators forecast their power needs day to day, week to week, and month to month. They assign a credit capacity factor to the various generators on line, based on past performance.

Wind generators are assigned a credit capacity factor of 13 percent by PJM with the understanding that since wind is intermittent, it could be lower or higher and need load-balancing to be at that amount.

This has implications for how many wind turbines it will take to meet Gov. Manchin's target for renewable energy.

In 2006, West Virginia had retail sales of more than 32 million megawatt hours of electricity. Ten percent of that is 3.2 million mWh. A 2-megawatt turbine at 27 percent average annual output generates 4,730 mWh annually, so we need 683 of the 2-megawatt turbines to average the desired 3.2 million mWh of wind-powered electricity.

Since PJM relies on wind turbines to provide only 13 percent of their power to the grid, we end up needing double the turbines, installing 1,366 of them on our ridgetops in the next six years to meet the 10 percent goal (assuming no growth in demand). That works out to 228 miles of ridgetops under assault, Manchin in the lead, pledging full support to the wind industry.

To reach the 25 percent renewables goal by 2025 will require 3,415 turbines on 570 miles of ridgetops -

enough to cover six parallel mountain ranges from Canaan Valley to The Greenbrier. The references in Manchin's speech to solar and switch grass were platitudinous buzzwords, providing verbal cover for his complete capitulation to the wind industry.

Renewable energy sounds like a good idea. Wind turbines are emblematic of its appeal: sleek technological marvels that spin on free energy. Unfortunately no amount of technology can overcome their inherent flaws. The last straw that the wind faithful cling to is the creation of a "smart grid" to take care of the problem of intermittency. That particular fix has yet to be tested on a large scale and is ill-suited to sparsely populated areas such as West Virginia.

For now, the wind faithful are counting on subsidies, tax breaks, government grants and mandates to keep them afloat. They arrogantly assume, based on their past successes, that state legislators will not take time to consider other ways of cleaning the air.

The West Virginia Legislature would do well to reject Gov. Manchin's baloney sandwich. If the goal of the proposed legislation is to make a serious attempt at reducing atmospheric carbon in a financially responsible way, I suggest the Legislature recast the governor's bill as the Alternative, Renewable and Carbon Neutral Energy Portfolio Act and give the power companies that serve West Virginia a real choice on how to provide a 10 percent quota of clean, carbon-free energy. Perhaps they could even use energy from a nuclear reactor or a carbon-sequestering coal plant.

Hooton is a member of Friends of Beautiful Pendleton County, a citizens group organized to oppose industrial wind turbines in Pendleton County and the surrounding Potomac Highlands.

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