

Komanoff – Wind Industry Apologist

Charles Komanoff's article, "Whither Wind?" *Orion* 25(5), reveals him as a simplistic apologist for the wind industry. That such deliberate misdirection and propaganda were allowed to be published in your magazine is disappointing.

Look at just a sampling of the more obvious exaggerations in the article. In discussing the energy upscaling from individual wind turbines (e.g. Bergey's 100 ft. high model) to industrial turbines, he says he'll "spare you the math." He continues to spare us, and himself, responsible math throughout this segment, despite having portrayed himself as a "number crunching" energy analyst. Using the "industry rule of thumb," which I would consider conservative, each "big turbine" (the energy output by a "big turbine" isn't specified, thereby sparing us more math) requires about 60 acres. That would, in his estimate, require an area composing "roughly all the land in Indiana or Maine." That's a very rough estimate indeed! My calculation brings the total of 60 acres X 400,000 turbines to 37,383 mi². Indiana's area is 35,870 mi² and Maine's is 30,865 mi². By his own estimate, he's lowballing land area requirements by 6% and 21% respectively. And that's assuming the turbines could be placed one per 60 acres over the entire extent of either state. Of course, they can only be placed where wind is sufficient, where conditions for foundation siting is appropriate, where power lines are nearby, etc., etc.

Then he states that the footprint for each of the 3.6-megawatt turbines (no longer "big" but with specifically noted output) proposed for Cape Cod is only 22 feet in diameter or 380 ft² (assuming the footprint is circular). He proceeds to spare us more math, suggesting that all 400,000 turbines could fit in 6 square miles. That's off by a square mile (another 17%) just because the fitting of circular "footprints" into a square mile can't be accomplished by dividing the area of a square mile by the number of square feet in a circular "footprint." They couldn't fit that way. Also, there's the little problem that the turbine nacelles and their blades are immense, so the 380 ft² "footprint" wouldn't allow a turbine to be placed on it. Of courses those 3.6 megawatt turbines are over twice the size of those now installed onshore, and he's already told us that increasing turbine size exponentially increases energy output, so that's another source of lowballing.

Even allowing for Komanoff's gross underestimates of the land required, based on size of turbine footprints, actual space requirements and miscalculations, he then goes on to suggest that there's just a four-fold order of magnitude difference in the two estimates - 380 ft² per turbine *vs.* 60 acres (26,136,000 ft²) per turbine. It comes closer to five orders of magnitude (four would be 1000, five would be 10,000.) Specifically his preposterously low estimate *vs.* the industry "rule of thumb" disagree by a factor of 6,878. He's lowballing by about 7,000 times. So much for Komanoff "sparing us the math."

Now, to correct industry estimates, let's include the present efficiency of wind turbines, generously put at about 34%, so we have to increase everything by another factor of 3. We're now in excess of 3 states of Indiana devoted to nothing but wind turbines. That's no forests or cities or interstates or lakes or rivers; just wind turbines farther than the eye can see. Now let's correct for useable wind. In Pennsylvania, where I live, and where the wind blows pretty briskly across our forested ridges, it's estimated that perhaps 8% of the land is useable, so we have to increase the estimate by a factor of 12. That's now 36 states of Indiana, and Indiana is a pretty big state. And then... Well, you get the picture.

The assumptions I've made are probably no less realistic than Komanoff's and lead to a vastly different conclusion. Our present abilities to estimate the requirements and environmental

consequences of using wind energy don't even begin to justify the claim that we can significantly reduce fossil fuel use with this valuable, green energy source. The solution to global warming will be, as environmental solutions always are, extremely complex and difficult. Komanoff's analysis is simple-minded and flatly dishonest. I haven't even scratched the surface on elucidating other flaws and misdirections in his article. He dismisses conservation, which responsible environmental analysts recognize must be the main source of reduction in electric energy use. Take a look at the successes of Portland, OR. He claims that there can be a one-for-one substitution of wind energy for fossil fuel plant production, which is patent nonsense. Repeated startup and shutdown of fossil fuel plants to match intermittent wind production is terribly inefficient and presently unfeasible. The human consequences, destruction of natural biodiversity and aesthetic considerations are all dismissed out of hand or ridiculed. Carl Safina is portrayed as unique among environmentalists in that he admits to giving consideration to aesthetic values. The implication is that either the rest of us are dishonest or have no aesthetics worth considering. That's a false dichotomy at best and grossly insulting to enlightened environmentalists. I could go on but I believe I've made my point.

The mission of the Orion Society is to promote awareness and cultural change while giving consideration to living justly, wisely and artfully on Earth. Frequently in the pages of your magazine, thinkers like Wendell Berry and Bill McKibben draw our attention to the painful tension between drawing our lives and sustenance from Earth while simultaneously attempting to renew and preserve it. It is beyond me why an organization that promotes such thoughtful goals and thinkers would publish such insulting and painfully misleading drivel as this Komanoff piece. There are actually people out here who are struggling to come up with satisfactory ways to approach the multifaceted problems we face as a species while being mindful that we live in a finite world. Please, in the future, use this wonderful magazine as a vehicle to responsibly expose us to their just, wise and artful counsel.

by Dennis M. McNair, PhD, 9/23/06