

Energy Conservation vs. Energy Efficiency

Back in the 70's environmental activists spoke of energy conservation. Today they mostly talk about energy efficiency. This may sound like a small semantic change, but actually it represents a significant and troubling transformation of the discourse, one that industrial wind power advocates seem to embrace. Whether they do so innocently or cynically, I cannot say, but I do contend that their advocacy leads us toward environmental disaster because they fail to adequately address the demand side of the consumption equation.

Energy conservation meant – at least I think it meant – individuals developing a critical awareness of their energy use and making conscious choices to significantly reduce that use. And yes, that did mean that we would all have to change our wasteful ways; we would have to sacrifice at least some of the conveniences or frills to which we had become accustomed. In contrast, energy efficiency means – as the Energy Star program proudly proclaims – “sacrifice nothing”, which, of course, means that we can continue our profligate consumption if we only improve the technical efficiencies of our refrigerators and light bulbs and eliminate phantom loads from the digital clocks on our microwave ovens as Mr. Komanoff glibly spouts. Bullshit.

Generating electricity from the wind focuses our attention on the supply side of the equation and at least implies that, with an enormous capital investment in 400,000 large wind turbines we can do our part to slow global climate change while suffering little inconvenience. In fact, it asserts that we can continue to increase the number of gadgets that fill our homes and empty our hearts, minds and spirits. Let's forget for the moment the absurdity of this capitalist economy making such a huge investment without looting the public coffers and ravaging our pocketbooks. Let's look at the technical issues that Mr. Komanoff casually brushes off.

The electric light and power industry divides generating capacity into firm and non-firm resources because of the nature of how demand must be met: instantaneously. Current technology does not allow for real storage of significant quantities of electricity as electricity. The juice must be produced at virtually the same moment it's consumed. Therefore, firm generating resources must always be available to cover what non-firm resources cannot.

Wind is a non-firm resource because its output varies according to the whims of Mother Nature. It varies not only with the absence or presence of wind but also with the speed of the wind. Most of this variation occurs between speeds of 10 to 20 miles per hour. Currently wind accounts for a very small portion of the generation connected to each of the three major grids in the US. In Europe wind accounts for a more significant percentage but it still doesn't even approach the quantity that Mr. Komanoff envisions. For example, in Germany, a leader in wind generation, wind carries about 10% of the base load. On the Big Island of Hawaii where I live, plans are afoot to have wind carry 30% of the base load. This is uncharted territory, so the real world viability of the plan remains in doubt. But one thing is certain; when we rely more heavily on wind, the stability of the grid will be reduced; and the consistency of voltage and frequency, which are already less reliable here than on the continent, will further degenerate. The lights will probably continue to burn brightly thanks to the support of oil-fired generators, but sophisticated electronic equipment, which requires high quality power, will suffer.

The industry has traditionally taken the conservative stance that it needed firm resources to supply the full anticipated demand. This was because the consequence of failing to have sufficient capacity was inconvenient at best (brownouts or rolling blackouts) and at worst disastrous (voltage collapse and whole grid failure). If wind generation were to replace fossil fuel plants one-for-one, the vast majority of our generators would become non-firm, and the

likelihood of such scenarios would increase, probably dramatically. Sure large grids like the ones that exist on the continent have more resources to compensate for the variations in output from individual generators even if most of them were fickle like a wind generator is by nature. However, such a system is fragile. Unless we develop new technologies for electricity storage, relying primarily on wind remains a dangerous chimera because it lulls us into a complacency about the need to address electricity demand. Such promises about how technology will provide the means to protect us from the problems technology creates should sound like the familiar lie it is.

Mr. Komanoff clearly accepts as inevitable an expansion of electrically powered toys rather than acknowledging how such gluttony represents the central problem we face not only with regard to greenhouse gas emissions but also in our relationships to the planet and its residents. The US contains about 5% of the world's population but consumes about 25% of its annual energy production. If we fail to address this imbalance, no new sources of electricity will save us or the planet.

Now let's consider the financial aspect. Not only are we talking about investing billions (maybe trillions) of dollars in new infrastructure, but we're also talking about compromising the profitability of the existing firm generation. Even today when oil prices are at or near a historical high, the cost of building and maintaining the infrastructure still amounts to well more than half the total cost of producing and supplying electricity. Fuel costs remain a minority contributor to overall costs. Consequently, profitability for each generating plant increases with frequency of use. If a fossil fuel plant, which formerly served as a base load carrier that ran 24/7 gets reduce to the status of supporting wind generation, its profitability will plummet. And ratepayers will suffer the twin financial burdens of huge new capital investment and unprofitable old investment.

Higher prices will make for reduced consumption at least in the fantasy world of elitist wonks who like to talk about "price signals" to consumers. Nice in theory, but in practice few people have much of an idea about how they might be able to significantly and cheaply reduce their electricity consumption. Much of this ignorance can get traced back to these same wonks who promote such inconsequential measures as compact fluorescent lamps and greater efficiency for dishwashers. Such measures do make a difference, but that difference is most often so small that it goes unnoticed on a monthly electric bill.

In the absence of programs that help folks make real and necessary reductions in their consumption, higher electricity rates will help crush the poor and push the middle class down into the ranks of the poor where they can be more easily crushed. This is the real promise of industrial wind generation.

And the real objections have very little to do with preserving nice views of the mountains and the seas. They have little to do with bird kills either, though both of the considerations should not be dismissed as trivial. Rather we should consider them along with other factors that honor the sacred landscape rather than look upon it as something we can exploit to power our hot tubs, air conditioners and entertainment centers.

Wind power has a place in a humane and sensible world, but that place cannot and should not be as prominent as Mr. Komanoff would have us believe.

by Yen Chin, 9/7/06