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THE HOT BLOG

Friday, August 29, 2008

Where's the Windfrastructure? [\[Drew Thornley\]](#)

Among the major barriers to large-scale, wind energy development is inadequate transmission capacity. Grids are currently ill-equipped to handle the transmission of large amounts of power from remote wind farms to electric load centers. In Wednesday's *New York Times*, Matthew Wald reports on wind integration and transmission problems in New York:

When the builders of the Maple Ridge Wind farm spent \$320 million to put nearly 200 wind turbines in upstate New York, the idea was to get paid for producing electricity. But at times, regional electric lines have been so congested that Maple Ridge has been forced to shut down even with a brisk wind blowing. That is a symptom of a broad national problem. Expansive dreams about renewable energy, like [Al Gore's](#) hope of replacing all fossil fuels in a decade, are bumping up against the reality of a power grid that cannot handle the new demands.

The basic problem is that many transmission lines, and the connections between them, are simply too small for the amount of power companies would like to squeeze through them. The difficulty is most acute for long-distance transmission, but shows up at times even over distances of a few hundred miles. Transmission lines carrying power away from the Maple Ridge farm, near Lowville, N.Y., have sometimes become so congested that the company's only choice is to shut down — or pay fees for the privilege of continuing to pump power into the lines.

The power grid is balkanized, with about 200,000 miles of power lines divided among 500 owners. Big transmission upgrades often involve multiple companies, many state governments and numerous permits. Every addition to the grid provokes fights with property owners. These barriers mean that electrical generation is growing four times faster than transmission, according to federal figures.

Unlike answers to many of the nation's energy problems, improvements to the grid would require no new technology. An Energy Department plan to source 20 percent of the nation's electricity from wind calls for a high-voltage backbone spanning the country that would be similar to 2,100 miles of lines already operated by a company called [American Electric Power](#). The cost would be high, \$60 billion or more, but in theory could be spread across many years and tens of millions of electrical customers. However, in most states, rules used by public service commissions to evaluate transmission investments discourage multistate projects of this sort. In some states with low electric rates, elected **officials fear that** new lines will simply export their cheap power and drive rates up.

I don't know how the \$60 billion estimate was derived, but Texas' ongoing

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transmission expansion efforts lead me to believe the estimate could well be on the low side. Last month, the Public Utility Commission of Texas approved a \$4.93 billion project to build transmission lines from the windy areas of West Texas to load centers hundreds of miles away. But as I [pointed out](#) last month, \$4.93 billion is just the beginning. Throw in collection costs, estimated by ERCOT in the range of \$580-820 million. Add higher-than-can-be-expected right-of-way fees. Bump up the estimates to account for the fact that all of the lines won't be built in straight lines, as ERCOT assumed in its estimates. Toss in some more for such things as escalating capital costs, and pretty soon, \$5 billion is a distant memory.

The lesson is that there are unintended consequences when governments make decisions best left to the markets. Demand for wind energy is being artificially propped up by state renewable portfolio mandates and government incentives. Yet because wind is an intermittent resource and because no commercial-scale electricity storage exists, wind is hard-pressed to meet renewable goals, while electric grids are burdened by the rapid integration of an intermittent resource that the grids were not designed to accommodate.

The growing energy demands of the U.S. call for the use of all the resources we can use. But we should use them when the technology can support their use — when the economics work. If we let the market bring resources to the table when they are market-ready, then we will have much more time to fix transmission limitations and address the other problems that our mad-dash-to-go-green has gotten us into.

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