

## **A smart grid, yes. A new national grid, no.**

Posted by David Morris (Guest Contributor) at 11:19 AM on 04 Mar 2009

The new mantra in energy circles is "national smart grid."

In the New York Times, Al Gore insists the new president should give the highest priority to "the planning and construction of a unified national smart grid." President Barack Obama, responding to a question by MSNBC's Rachel Maddow, declares that one of "the most important infrastructure projects that we need is a whole new electricity grid ... a smart grid."

We lump together the two words, "national" and "smart" as if they were joined at the hip, but in fact each describes and enables a very different electricity future. The word "national" in these discussions refers to the construction of tens of thousands of miles of new national ultra-high-voltage transmission lines, an initiative that would further separate power plants from consumers, and those who make the electricity decisions from those who feel the impact of those decisions.

The word "smart," on the other hand, refers to upgrading the existing network to make it more resilient and efficient. A smart grid can decentralize both generation and authority. Sophisticated electronic sensors, wireless communication, software and ever-more powerful computers will connect electricity customers and suppliers in real time, making possible a future in which tens of millions of households and businesses actively interact with the electricity network as both consumers and producers.

Advocates of a new national ultra-high-voltage transmission network offer three main arguments:

1. New high-voltage transmission lines are needed to decrease electric grid congestion and therefore increase reliability and security.

There is indeed congestion on some parts of our distribution and transmission networks. Congestion reveals a problem; it doesn't demand a specific solution. It can be addressed by reducing demand through increasing energy efficiency or by increasing on-site or local energy production. Both strategies are often less costly and quicker to implement than building new transmission lines. An analogy from the solid-waste sector may be appropriate. Exhausting nearby landfills does not inevitably require us to send our garbage to new and more distant landfills. We can emphasize recycling, composting, scrap-based manufacturing and reuse.

2. A new national high-voltage transmission network is necessary to dramatically increase renewable energy.

President Obama wants to build new transmission lines because, "I want to be able to get wind power from North Dakota to population centers, like Chicago." Writing in Vanity Fair, Robert F. Kennedy Jr. wants a new high-voltage transmission system to "deliver solar, wind, geothermal and other renewable energy across the country."

But do we really need to deliver renewable energy across the country? The distinguishing

characteristic of renewable energy is its availability in abundant quantities virtually everywhere.

The Institute for Local Self-Reliance recently pulled together the modest amount of data available on the amount of renewable energy available in each state. Our report, "Energy Self-Reliant States," concludes that at least half the 50 states could meet all of their internal electricity demand with renewable energy found inside their borders, and all states could meet their current renewable electricity mandates from homegrown energy sources.

High-voltage transmission lines are not necessary to dramatically expand renewable-energy generation. But they are essential if we want to expand coal-generated electricity, because coal is found in limited places, and coal-fired power plants tend to be very large and therefore must serve very large markets.

**This is why, until recently, the primary advocates for new high-voltage transmission lines were those who wanted to construct large coal-fired power plants. One of the most effective ways to stop new coal-fired power plants is to stop building new high-voltage transmission lines.**

Before building new transmission lines, we should first investigate how much capacity there is on existing lines. Tellingly, that data is not readily available. A several-year campaign in Minnesota by the North American Water Office led to the nation's first utility-led analysis of the capacity on the existing transmission system in one part of the state. The results were so positive the state legislature ordered the utilities to expand the analysis.

The most recent study's data suggest that Minnesota can achieve its renewable electricity mandate of 25 percent by 2020 without building any major new networks of high-voltage transmission lines (a report summarizing the utilities' studies is available at the Institute for Local Self-Reliance website).

3. New transmission lines allow us to harness renewable energy in its best locations, thereby lowering costs.

Many would argue that although renewable energy is available virtually everywhere, sunshine is more plentiful and the winds are stronger in a few locations, and therefore by generating electricity in those locations, we save money. Sunny Nevada, for example, can produce solar electricity from solar panels for about 20 percent less than Iowa and about 35 percent less than in Pittsburgh. A wind turbine in windy North Dakota could produce electricity at a cost close to 30 percent lower than the same turbine located in Ohio.

But in most cases, these significant variations in production costs result in modest variations in the final cost of energy to the ultimate consumer, because more **remote generation resources have an added cost of transporting the energy across long distances**. For example, my colleague John Farrell estimates that if Ohio's electricity came from North Dakota wind farms -- 1,000 miles away -- the cost of constructing new transmission lines to carry that power, and **the electricity losses suffered during transmission, could surpass the lower cost of production**.

Even if modest financial savings do occur, they are easily outweighed by the arduous and contentious prospect of having to seize or negotiate for the use of the land of hundreds of thousands of farmers, homeowners and businesses to build the new lines.

The arguments against building and overlaying a new national transmission system are more compelling:

1. Building a new high-voltage transmission line **diverts resources from the more important task of making the best use of the existing electrical network and integrating the new generation of decentralizing energy technologies.**

Some advocates estimate the full cost of a new national transmission grid at \$100 billion. In these tough credit markets, as states and the federal government design financial incentives that make it easier and more financially attractive to build high-voltage transmission lines, **they undermine the potential for energy efficiency and decentralized production.** Richard Cowart, director of the Regulatory Assistant Project noted back in 2002, "Over-investing in transmission will tend to support remote generation and undermine the value of distributed resources. Under-investing in transmission will have the opposite effect."

2. Building new transmission lines requires the federal government to increasingly pre-empt state and local authority, which may undermine a generation of advances in state electricity regulation.

To accelerate the construction of ultra-high-voltage transmission lines, the federal government may well have to pre-empt state and local authority, because states and localities and their citizenry will not look kindly on tens of thousands of miles of new transmission lines crossing their lands to deliver power to distant communities. Indeed, it is the fear of popular opposition to such transmission lines that fuels the drive for pre-emption.

Billionaire T. Boone Pickens, the country's most visible proponent of a national transmission system, bluntly told Congress a few months ago that he is "disconcerted that state public authorities ... are required to consider the benefits of the project to the citizens of their state." He worries that, "Where state utility commissions are limited by state law to considering benefits to citizens of their state, eminent-domain power may not be available to transmission developers wishing to cross the state without providing transmission service to local generators or local electricity users." He wants Congress to give the Federal Energy Regulatory Commission "exclusive jurisdiction" to site new transmission lines.

An increasing centralization of authority over electricity planning has been slowly occurring over the last 15 years. It was speeded up with the passage of the 2005 Energy Act that requires the Department of Energy to designate "national interest electric transmission corridors." Once designated, state regulatory bodies have one year to approve an application for a new transmission line, or the federal government can step in and issue the approval.

Corridors of Power

It is instructive to see how the federal government has exercised this newly acquired authority to designate national interest transmission corridors. In late 2007, DOE released its first group of designated transmission corridors, setting off an immediate outcry by the affected states. Governments and regulatory agencies in Pennsylvania, Virginia, Delaware, Maryland and New Jersey all petitioned for a rehearing. DOE rejected their petition.

Over the last 30 years, grassroots activism has pushed state energy regulatory agencies away from their traditional focus on encouraging bigger power plants and higher-voltage transmission lines and toward a new decision-making matrix called "**least cost planning.**" **Utilities are required to examine and pursue alternatives like increasing energy efficiency or installing smaller, dispersed power plants before they can build new traditional power plants or transmission lines. Recently, states also require utilities to take into account environmental costs and to give renewable energy a priority.**

The states complained that in designating transmission corridors, the DOE had refused to consider non-transmission solutions to congestion problems, something their own state laws require, as does the Federal Power Act. The FPA specifically directs the DOE to issue its report only "after considering alternatives."

The New Jersey Board of Public Utilities asked the DOE to refrain from designating corridors "until after it analyzed whether alternative means, including energy efficiency, demand response and clean local generation within the critical congestion area could relieve congestion more effectively, at lower cost, with less harm to the environment, with better assurance of the reliability and security of our electricity supply, or with less vulnerability to uncertainties such as future fuel costs, future environmental requirements and other variables."

The DOE claimed that an examination of non-transmission solutions was outside its jurisdiction. According to the DOE's perverse interpretation of the law, the federal government can pre-empt state authority but it cannot take into account the same factors states do in deciding whether to approve new transmission lines, even though almost everyone agrees that consideration of those factors results in better decisions.

The Mid-Atlantic Area National Interest Electric Transmission Corridor that the DOE designated encompasses nearly all the state of Maryland and New Jersey. New Jersey complained, arguing that the DOE's own data indicated that much of these areas are not experiencing transmission constraints or congestion. The DOE did not deny New Jersey's allegation but maintained, "(T)he statute does not appear to foreclose the possibility of national corridor designation in the absence of current congestion ... even without congestion, DOE can approve a line where it wants to encourage 'desirable generation.'"

In this case, the DOE decided that coal-fired power plants constituted desirable generation. The uncongested parts of the DOE's designated corridor were largely in areas of Ohio, Pennsylvania, Virginia and West Virginia that account for more than two-thirds of the coal produced in the Appalachian region.

'National' or 'Smart'?

This is the context for Obama's presidency. It is unclear whether he will emphasize "national" or "smart." Obama's fiscal stimulus plan calls for \$11 billion for what he calls a smart grid investment program. The program specifically mentions spending on new high-voltage transmission lines, but it also encompasses investments in smart grids. Since the federal government has direct control over high-voltage transmission lines through the Federal Energy Regulatory Commission but not over the retail subtransmission and distribution networks, it might find it easier to push money toward the former ("national") rather than the latter ("smart").

The DOE's decisions to date on national interest transmission corridors have come while George W. Bush was president. It is unclear where President Obama stands on the growing state-federal controversy. At his confirmation hearing, Secretary of Energy-designate Steven Chu declared a nationwide grid "in the national interest" and insisted the country needed a "new way of doing business" to get it built quickly.

However, when Sen. Robert Menendez, D-N.J., protested about the DOE's process in declaring most of New Jersey a federal pre-emption corridor, Chu acknowledged the problem and ended up saying that new lines must be sited "in a way that takes into consideration the local feelings but yet also recognizes the national needs."

Will Chu require the DOE, and will President Obama ask FERC, to evaluate petitions for new transmission lines using the same least-cost-planning process now used by many states?

Will the federal government require all utilities to undertake the same analysis done in Minnesota to identify the capacity of existing transmission lines to absorb more renewable energy?

Will fiscal stimulus spending on upgrading the electricity grid emphasize smart over national?

The shape of our electricity future might depend on the answers to these questions.

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