

**Remarks of Bob Eleff, House Research Department
Before the Legislative Electric Energy Task Force
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In the past 6 months, the Working Group has heard from representatives from utilities, small and large wind developers, state policy analysts and energy and environmental public interest groups. One thing they all agreed upon is the need for greater transmission capacity to service wind energy.

We heard that the lines in southwestern Minnesota that will transport wind energy from Buffalo Ridge are already fully subscribed, even though they have not yet been constructed. We heard that Xcel Energy, on occasion, pays producers for wind that it cannot transport over a constrained transmission network, essentially wasting that energy.

Transmission capacity shortages affect other sources of electricity as well, and, given the projections from Minnesota's utilities of a need for additional 4000 MW over the next 10 years for baseload and intermediate generating capacity, will be the subject of much discussion. But adequate transmission resources are particularly important for wind. For one reason, it is typically located far from large numbers of electricity consumers. Another reason is timing. A transmission bottleneck negates one of wind's advantages over conventional electric generation: the ability to build projects quickly: 18 months to two year time frame is not unusual. The problem is that transmission projects can take 6-7 or more years to complete. So unless transmission projects are planned in advance of additional wind generation, that generation won't be able to get to market.

Timing is a crucial element: generation and transmission have to be looked at in tandem. What we've got is a classic chicken-and-egg problem: Developers can't build wind turbines and have them sit idle for a few years while the transmission lines are being planned and constructed. And transmission lines won't be built unless there is enough capacity that enables the line to be economically viable. The process is not made any easier by the nature of entrepreneurial small wind development: we don't know exactly when or where wind generation will occur, nor by whom it will be developed.

A lot of people in this state, many of whom are in this room today, have done the good work that has made Minnesota a national leader in wind development. But unless the state becomes equally adept at figuring out how to get that wind to market, that leadership may be at risk.

This problem is not exclusive to Minnesota. Nationally, since the 1970s, new transmission line miles have grown at half the rate of electricity demand. In Minnesota, the last major transmission line built, before the lines in southwestern Minnesota from Buffalo Ridge, was in 1979, 25 years ago. A combination of conservation, the deployment of natural gas peaking plants, and purchases from the grid has been sufficient to bridge the gap.

Why are so few transmission lines being built? Local opposition to powerlines is one reason, a situation with which Minnesota has had some experience. Another significant reason is regulatory uncertainty as to who will own and operate the transmission system and who will pay for additions and improvements to the grid.

This was not a problem when utilities owned both generating plants and transmission lines to bring that power to customers. New transmission was financed by the utility prior to generation. The timing was coordinated. It was assumed that the Federal Energy Regulatory Commission (FERC) would affirm that the project benefited ratepayers and increased grid reliability. The transmission investment was repaid from rates on the sale of electricity, usually in 5 years. That system governed the vast expansion of the transmission grid during the 20th century.

That model of utility finance no longer operates. The link between generation and transmission has been cut. What changed? Electricity restructuring – the move towards a more market-based approach to electricity service-- has transformed the system. FERC has pushed utilities to separate their transmission and generation operations. In 1999, FERC required utilities to transfer operational control of transmission to regional transmission organizations such as MISO (Midwest Independent System Operator). Minnesota utilities have done so. In order to create a freely-flowing market in wholesale electricity, all transmission lines are now common carriers with access equally available to all generators. A utility which owns transmission can't favor its own generation. That also means that transmission cannot be developed solely for one type of energy – wind or coal – but must be open to all generators. In short, this is not your father's electricity grid.

With respect to transmission, the thought behind the market model was this: Since transmission is a relatively small proportion of total energy costs, under 10 percent, paying for additional transmission lines will be offset by the lower-priced resources those lines will provide access to. In fact, MISO's first 5-year transmission plan published in June 2003 confirmed this hypothesis. Under a "high-wind" scenario that called for developing 10,000 MW of wind in the Midwest, access to lower-cost wind offset the cost of transmission additions, resulting in lower overall energy costs to consumers.

But the confirmed hypothesis doesn't tell us who will make the transmission investment. The question the new system hasn't yet answered is: Who pays for constructing the transmission lines? As a USDOE Report to Congress ("Analysis of Wind Resource Locations and Transmission Requirements in the Upper Midwest,") issued in May of this year stated:

"The question of who pays for transmission expansions will be a major barrier to large-scale exploitation of the abundant wind (and coal) resources in the upper Midwest. Until the question of who pays (which includes issues of cost recovery and cost allocation) is answered, there likely will be no major expansion of transmission capacity to support wind energy development in the upper Midwest."

How does this new market-based system match up with renewable energy, particularly wind? Not very well, it appears. Many wind projects are small, and so is the financial capacity of their developers. They cannot contribute a substantial up-front transmission investment. Will the utility buying the power step in and make the investment? Again, the characteristics of renewables create difficulties. The small size of wind projects – and the fact that several projects in a given area are developed over a period of years -- means that the initial wind development may not justify such a substantial transmission investment. There's the chicken-and-egg problem.

In the past, both pieces of the puzzle –generation and transmission – were controlled by the same entity, so coordination was easier. That is no longer the case.

The new open access regime produces another obstacle to transmission investment, illustrating what economists call the free-rider problem. Since capacity on the line must be open to all, where is the incentive to be the one to build the line that others will use? If you do, you assume all of the risk, but others will benefit. As the California PUC stated in a December 2003 Report to the Legislature: “The fact that some developers in a given renewable resource area would bear disproportionate financial responsibility for required transmission upgrades, while other developers would escape such costs, creates a serious obstacle to the planned development of renewable resources. . . .”

Another significant source of uncertainty surrounding transmission investments is the issue of recovering those investments in retail electric rates. A major issue is how to allocate rates among beneficiaries of transmission service when the flows over a line contain power destined for customers of a particular Minnesota utility (called “native load) and some that is only passing through to customers in a different state (“wholesale electricity”). How the Minnesota PUC will set those rates is as yet unknown. That makes potential transmission investors nervous.

MISO currently has a Regional Expansion Criteria and Benefits Task Force working to determine how to allocate benefits and costs of transmission across the 14-state membership. It will file that rate-setting protocol with FERC, at which point Minnesota could intervene if it feels the interests of Minnesota consumers are not served by the tariff. FERC can, of course, accept or reject the proposed rate framework.

Another factor which many have pointed to as inhibiting the speedy construction of new transmission lines is the length and complexity of the Public Utilities Commission's Certificate of Need process and the subsequent environmental review of such projects conducted by the Environmental Quality Board. This is an area the legislature may want to examine to see if the timeline can be shortened.

In recent years the Minnesota legislature has recognized the import of some of these issues and addressed transmission needs for renewables.

- In 2001 and 2002, legislation was passed allowing utilities to recover the costs of transmission for energy generated to meet the state's renewable energy objectives for wind and biomass automatically, without the need for a rate case. This reduces some of the risk and uncertainty surrounding transmission. The Commission established a process to review costs proposed for this automatic rate recovery, and the first case consisting of 8 Xcel projects is currently awaiting a Commission decision. (MS 216B.1645)
- In 2001, the legislature explicitly gave the Public Utilities Commission the authority to order public utilities to make "adequate infrastructure investments" in transmission facilities. MISO also has such authority; neither organization has made use of it yet. (MS 216B.79)
- In 2001, the legislature ordered utilities owning or operating transmission lines to submit a report to the Public Utilities Commission every two years identifying present and foreseeable inadequacies in the state's transmission system and alternative means to address them. This statute was amended in 2003 to include the specific requirement that such reports "determine necessary transmission upgrades to support development of renewable energy resources required to meet" the state's renewable energy objectives. (MS 216B.2425) We will see when the next round of reports are filed a year from now how useful a road map we have.

I should also mention two on-going MISO studies looking at developing a combination of wind and coal resources that will contribute information regarding future transmission needs and plans. One study is focusing on North Dakota and Minnesota, while another encompasses parts of Minnesota, Iowa and Wisconsin.

The legislature will want to closely monitor these issues as they continue to develop. In particular, the Biennial Transmission Reports due to be filed a year from now, given their new directive to report on transmission needed to support the REOs, may provide a clear look at future needs.

MISO studies take place at the regional level. The Biennial Transmission Reports aggregate Minnesota utility perspectives on transmission for renewables. What may be missing is a Minnesota-wide plan to insure that the legislature's commitment to developing sources of renewable energy is matched by a commitment that those energy sources get to market. If the legislature thinks that more comprehensive planning needs to be done, it may want to examine options to insure that that occurs.