

**Basin Electric Power Cooperative
DOE 2009 Congestion Study Workshop
Oklahoma City, Oklahoma**

Basin Electric Power Cooperative would like to thank the Department of Energy for this opportunity to share some of our thoughts on transmission congestion issues.

Basin Electric is a wholesale power supplier to rural electric cooperatives located in the mid-west and in both the east and west interconnections. Naturally, our generation and transmission facilities also reside in both interconnections so we use asynchronous back-to-back DC facilities to balance loads with resources.

With headquarters in Bismarck, North Dakota; we find ourselves in the heart of some of the nations most desirable wind patterns for potential renewable energy development as well as electric energy production from more traditional sources. Lignite coal has been a reliable resource for electricity production in North Dakota for decades. Recently the U.S. Geological Survey reported a large deposit of recoverable oil in the Bakken Formation beneath North Dakota and Montana.

The 2006 National Electric Transmission Congestion Study labeled the Dakotas/Minnesota region as a Conditional Constraint Area due to the potential for wind development as well as development of additional lignite fueled generation. The discovery of the oil potential of the Bakken Formation is now driving rapid growth of electric pumping load in North Dakota. Basin Electric is expanding our high-voltage transmission network

in order to supply this demand. Over the next few years, we will be adding over 250 miles of high-voltage transmission with about twice as many additional miles being required shortly thereafter if oil and gas pipeline transportation develops as some have indicated.

In the eastern interconnection, our transmission facilities are part of a joint transmission system known as the Integrated System or IS. The IS partners are Basin Electric, the Western Area Power Administration Upper Great Plains Region and Heartland Consumers Power District. These integrated transmission facilities provide most of the backbone high-voltage transmission network within the Dakotas.

Because of the proximity of the IS to the Midwest ISO market, we have many generation resource developers requesting to connect to the IS so that they can deliver electricity into the Midwest ISO. In addition, renewable resource mandates have significantly expanded the demand for wind generating resources. The IS has requests for about 15,000 megawatts of generation, primarily wind, wishing to interconnect to it. Unfortunately, these requests do not include any commitment to long-term use of the IS transmission system and therefore it is not possible to finance the construction of facilities for their benefit.

Transmission Pricing

The proverbial "elephant in the room", the question of who will pay must be addressed because analysis of congestion, however useful it may be, does not finance construction. Basin Electric has been a supporter of regional postage-stamp pricing for transmission.

A little over a year ago, a group of transmission providers in our region from Iowa, Minnesota, Nebraska and the Dakotas offered a proposal for a regional transmission tariff that would allow a user to pay a combined system-wide average rate and reserve long-term network transmission service throughout the region. The goal was to enable financing of regional expansion for the regional benefit of all users. However, the template established within the LMP markets – the template of license-plate pricing – proved to be an overwhelming hurdle for such a regional pricing template to overcome at that time.

Something needs to change. LMP markets provide pricing signals that tell where congestion is occurring, but these signals are not causing transmission construction. In the 2006 report it was mentioned that the CapX 2020 group is developing significant transmission within Minnesota, but it needs to be noted that this investment is for reliability and not in response to price signals.

If LMP price signals can tell us where congestion is occurring because the cheap generation on one side of a constraint cannot be delivered to load paying a high cost on the other side, why shouldn't that load help fund the transmission facilities that would lower its cost of electricity? If generation on the cheap side of a constraint would profit from relief of congestion, why shouldn't that generation contribute to the transmission from which it would benefit?

TLRs

Our IS partner, the Western Area Power Administration manages the electric energy produced by the dams along the Missouri River in Montana, North Dakota and South Dakota. The river has been experiencing a drought for several years significantly reducing the production of hydro-electric energy. Due to the reduced energy, Western has had to purchase replacement power to meet its commitments. Increasingly, the ability to import such purchases is being limited by congestion on facilities remote from the IS. The NERC Interchange Distribution Calculator uses transaction tags to determine the impact that transactions have on a facility and to assign relief responsibility to alleviate congestion. The LMP markets however do not tag transactions within their footprint so they provide to NERC what they determine their impact to be.

The ability of LMP markets to adjust their economic dispatch rapidly allows them to operate very close to the flow limit on transmission facilities however it also causes a tension with tagged transactions which are not nearly as dynamic. In addition, the non-LMP parties do not have independent knowledge of the flows caused by the LMP dispatch and thus cannot determine the equity of relief responsibility assigned by NERC.

The IS partners have been investigating options to alleviate this tension. One option is to use generation re-dispatch between the IS and the Midwest ISO to achieve the assigned relief responsibility on predefined flowgates. But, we are concerned that the dynamics of the LMP market and the unpredictability of transmission outages will overwhelm predetermination of appropriate generation pairs for re-dispatch.

A second option is to include the IS loads and generators in the Midwest ISO LMP dispatch calculation. This option however inserts additional variables into the uncertainty that comes with the generation and transmission development required to meet the load growth we are currently experiencing. These variables include independently determined and administered financial rights which are much less understood than the physical transmission that our rural members have built and paid for, and generator dispatch rules significantly different from the cost-based production our consumers are familiar with.

Conclusion

Although we can and are addressing the need to serve customers of our Integrated System, we have been observers only of the transmission being constructed as a result of LMP market price signals and can only say that in that role we are still awaiting proof-of-concept.