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November 21, 2008

Wind on the Wires

Responses to the Upper Midwest Transmission Development Initiative October 28, 2008 Stakeholder Questions

Wind on the Wires (WOW), a collaboration of the wind industry and clean energy advocates in the Midwest, applauds and congratulates Governors Doyle, Culver, Hoeven, Rounds and Pawlenty for their individual and collective commitment to planning and building a robust regional transmission grid for wind development and other needs in the Upper Midwest.

WOW is especially pleased to see that the Governors have elected to tackle the issue of cost allocation for regional transmission head-on. Cost allocation and assurance of cost recovery for transmission infrastructure investments is the major barrier to constructing transmission upgrades in the Upper Midwest, and throughout the Midwest Independent System Operator (Midwest ISO) region.

In the Energy Security and Climate Stewardship Platform published in November of 2007, the Midwestern Governors Association established an aggressive regional goal to have 30% of the electricity used in the twelve state region of the MGA come from renewable resources by 2030.[1] It is clear that regional commitment of the governors cannot be met if the Upper Midwest Transmission Development Initiative (UMTDI) is not able to find solutions on this critical issue of cost allocation.

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1. How much renewable energy should the upper Midwest states plan for, over what time-frame, and in what increments?

As noted above, the Midwestern Governors Association, joined by the premier of Manitoba, has established a regional renewable electricity goal for the Midwest of:

- 10 percent by 2015
- 20 percent by 2020
- 25 percent by 2025
- 30 percent by 2030

WOW estimates that achieving that 30 percent goal by 2030 will require the installation of between 90,000 and 125,000 megawatts (MW) of wind in the twelve states that comprise the

[1] "Energy Security and Climate Stewardship Platform for the Midwest", Midwestern Governors Association (November 2007), page 14.

MGA,[2] and for the sake of convenience, will use 100,000 MW of wind as the ballpark estimate. [3] North Dakota, South Dakota, Minnesota, Iowa and Wisconsin (the UMTDI states) account for about 30% of the electricity used in the MGA region. Therefore, these five states should be planning for at least 30% of the 2030 regional commitment, or about 30,000 megawatts. [4]

In addition, since the UMTDI states encompass some of the best wind resources in the world, the UMTDI should assume that a significant amount of additional wind capacity in the UMTDI states will need to be installed for export to:

- other states in the MGA region that may not have the quality wind resources the UMTDI states have; [5] and
- states outside the MGA region to meet a national Renewable Portfolio Standard, if one is enacted.

Early analysis from studies discussed in the next section may indicate that on the order of 60,000 MW of wind in the UMTDI states may be needed to meet a national 20% RPS. To continue to stay ahead of this issue, then, the UMTDI should plan for the transmission for at least 30,000 MW of wind, plus an additional 30,000 MW of capacity for export, for a total of 60,000 MW of wind installed in the Upper Midwest by 2030.

In its Regional Generation Outlet Study (RGOS), the Midwest ISO is planning various transmission scenarios to meet the combined renewable electricity requirement of Minnesota, Wisconsin, Iowa and Illinois. In that study, the Midwest ISO is planning transmission to support about 16,000 MW of wind (3,000 MW of existing capacity plus about 13,000 MW new wind capacity).

Obviously, this amount of wind development, as well as the additional transmission capacity constructed to support it, has to be treated as absolute minimums by the UMTDI. Additional transmission development in the UMTDI states and in the MGA states generally will be necessary for the region to be on-track to meet the UMTDI states' contribution to the MGA's regional renewable electricity commitment of 30% by 2030 and any national RPS.

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[2] The Midwestern Governors Association is made up of the governors of South Dakota, Michigan, Wisconsin, Minnesota, Iowa, North Dakota, Nebraska, Illinois, Indiana, Kansas, Ohio and Missouri.

[3] For context, 100,000 MW of wind would be about a third of the amount of wind estimated by the U.S. Department of Energy to be necessary to meet a 20% national wind goal by 2030. See "20% Wind Energy by 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply" (May 2008), page 2.

[4] To put this number in context, there are about 5,500 MW installed currently in the twelve MGA states (3,870 MW in the UMTDI states), and the combined renewable electricity requirements of the individual MGA states total about 30,000 MW by 2025. Nine of the twelve MGA states have some form of renewable electricity requirement or obligation – North Dakota, South Dakota, Minnesota, Iowa, Wisconsin, Illinois, Ohio, Michigan and Missouri.

[5] According to the American Wind Energy Association website (www.awea.org/projects), North and South Dakota are estimated to have the 1st and 4th greatest wind resource potential of the 50 states, respectively. Minnesota has the 9th best wind resource, Iowa the 10th, and Wisconsin the 18th.

The UMTDI should request the Midwest ISO to build on its RGOS work (after that work is completed), to provide transmission information for meeting the UMTDI states' contribution to the 30% by 2030 regional goal (30,000 MW), and potential UMTDI exports to assist other states in meeting their portion of the MGA regional commitment, or to meet a national 20% RPS (an additional 30,000 MW). These analyses will also act as a "sensitivity analysis" to help ensure that the transmission facilities identified as needed by the RGOS are consistent with significantly larger amounts of wind development in the Upper Midwest.[6]

In order to be successful, it will be critical for the UMTDI to:

1. stay on its proposed schedule of an initial recommendation to its Governors in the spring of 2009;
2. push the Midwest ISO to treat the RGOS as a top priority and to provide UMTDI with timely data from the RGOS study in order to inform UMTDI's cost allocation discussions;
3. encourage the Midwest ISO to act as quickly as possible to approve the transmission facilities identified as needed by the RGOS, and to push the appropriate utilities to take all steps necessary to construct those facilities swiftly;
4. request that the Midwest ISO provide transmission study information on the two scenarios described above, to support the installation of 30,000 MW in the UMTDI states, and 60,000 MW in the UMTDI states, as discussed above; and
5. continue to work beyond spring of 2009, to ensure that the transmission in the Upper Midwest that is needed to meet the MGA's renewable electricity commitments are planned for and constructed.

The initial recommendations provided to the UMTDI governors in the spring of 2009 must be considered to be just the first step toward the Upper Midwest's contributions to meeting the MGA regional renewable electricity requirements, not an end in itself.

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2. What voltages, how many miles of new or upgraded transmission and how much related infrastructure is needed in the upper Midwest region to meet our states' renewable electricity goals, ensure regional reliability and promote economic dispatch?

The UMTDI should look to the results and data from a variety of technical studies that are looking at these and related questions, such as:

- the RGOS

[6] In making this recommendation, WOW is not seeking to affect the assumptions of the RGOS analysis or slow down implementation of the study findings in any way. We believe this study should result in the construction of critical transmission infrastructure in the Upper Midwest, facilities that are desperately needed. However, this infrastructure, while absolutely necessary, will not be nearly sufficient. The UMTDI and the Midwest ISO need to push well beyond the RGOS assumptions and work toward much greater amounts of transmission for the benefit of ratepayers and wind developers in the Upper Midwest and beyond.

- transmission planning initiatives by the CapX2020 utilities, ATC, Mid-American and others
- the Minnesota RES transmission study
- MISO's MTEP-08 and MTEP-09 studies
- the Joint Coordinated System Planning (JCSP) study[7] and
- the Eastern Wind Integration Transmission Study (EWITS).[8]

It will be important to see what facilities are identified as commonly needed by a number of these studies. In addition, it is important to note that these studies should be treated as iterative in nature – as transmission & generation facilities are built, and load grows or shifts, the technical studies will need to be updated and assumptions revisited. This is another reason why the UMTDI should continue its work after spring of 2009.

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3. Where are the greatest potential renewable resources located in the upper Midwest? Where are the most accessible potential renewable resources located in the upper Midwest? Where are the markets for that energy? What are the likely and most appropriate means to deliver renewable generation to load?

The best resources within the five UMTDI states are being identified by the RGOS, using the best available wind resource data from the National Renewable Energy Laboratory (three years of mesoscale wind data).[9] However, as noted above, the RGOS is looking for wind resources to develop only about 13,000 MW of new wind in these 5 states, and the UMTDI ultimately needs to have resources identified for about 60,000 MW of new wind.

The UMTDI should ask the Midwest ISO to utilize the same process and data the RGOS is using to locate the best resources available in the UMTDI states, to meet the UMTDI states' contributions to the MGA regional renewable electricity commitment (30,000 MW), and an additional 30,000 MW for potential export outside the UMTDI states.

As noted above, the markets for this wind energy extend well beyond the borders of the UMTDI, and, as discussed in the context of the JCSP and EWITS studies, may extend outside the MGA states. The possibility for export of Midwestern wind energy outside of the

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[7] The JCSP study is a joint transmission planning initiative by the Midwest ISO, the Pennsylvania, New Jersey, Maryland Interconnection (PJM), the Southwest Power Pool (SPP), the Tennessee Valley Authority (TVA), the ISO New England, the New York ISO and the Midcontinent Area Power Pool.

[8] The goal of the Department of Energy's Eastern Wind Integration and Transmission Study (EWITS) is to evaluate the power system impacts with increasing wind penetration on most of the eastern interconnect. The JCSP is working in collaboration with EWITS to investigate 20% and 30% wind energy penetration scenarios throughout the eastern half of the United States (from the Dakotas to the Atlantic Ocean), and the transmission required to support that level of penetration.

[9] This is the same data being used for the JCSP and EWITS studies mentioned above.

Midwest must be taken into consideration by the UMTDI as it plans the transmission network for the Upper Midwest. In addition, a number of electric utilities in the UMTDI states may also be seeking to exceed current renewable requirements, to purchase or generate wind energy for sale to the benefit of their shareowners/ratepayers. Export outside of the UMTDI and outside of the MGA states is likely to be necessary to meet any federal renewable or emissions reduction goals established under the new Administration, and would provide significant economic development benefits to the UMTDI states.

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4. Once potential generation sites are determined along with development timeframes what are the estimated costs of constructing an economically and operationally optimal network of needed transmission additions or upgrades? Over what timeframe?

Similar to our answer to question number 2 above, the UMTDI should look to the results and data from a variety of technical studies listed in that question, and look to see what facilities are commonly identified as needed. It is important that the UMTDI:

- establish the appropriate scope of wind development for its transmission planning (30,000 MW to meet the UMTDI states' contribution to the MGA 2030 commitment, plus 30,000 MW for export)
- develop a layered transmission plan (building on the transmission facilities identified by the RGOS) to ensure that level of wind development in the region can get to market cost-effectively and reliably
- plan to "build more earlier" and let the system grow into the new capacity – this will allow projects to capture cost-efficiencies and avoid "corridor fatigue." [10]

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5. What options exist to control or mitigate the costs of transmission construction?

There are a number of options to control or mitigate the costs of transmission construction. Instituting an aggressive regime to promote energy conservation and demand response in the region will help control the amount of transmission that is needed. An additional strategy is to identify the optimal blend of: (a) developing the very high value wind resources in the region, with the required long distance transmission necessary to deliver that wind energy and (b) development of lower value wind resources closer to load. That optimal blend will be informed by the RGOS study and it will be critical that the UMTDI is provided with that information in a timely fashion.

[10] Building larger lines within a single corridor as opposed to several smaller lines in multiple corridors with the same total capacity is more cost effective, and will avoid siting and permitting challenges of multiple corridor buildout.

WOW has long advocated for the use of existing corridors first before looking at greenfield development – corridor sharing will help minimize costs as well as minimize landowner aggravation. Again, we note that building larger capacity lines can avoid future challenges with corridor access, and result in cost savings.

It is also important to note that the cost of new transmission is actually quite small relative to the overall costs on a retail customers bill, and that, a truly robust and flexible transmission system can mitigate the costs of its construction through reduction in congestion costs, reduction in outages and lost productivity, increased access to markets for energy not needed to serve native load, etc.

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6. How should the costs of needed transmission construction be apportioned across the region? For example, should producers and/or sellers of the energy interconnected to a particular transmission line be apportioned a certain percentage for delivering their product over that line? Should energy buyers/users of energy delivered by a specific powerline bear a cost allocation percentage for that line? Should States through which a transmission line crosses but does not necessarily provide energy pay a portion of the costs of the transmission line?

As noted in the beginning of our comments, uncertainty over cost allocation of, and cost recovery for, transmission infrastructure investments are the biggest barrier facing the development of an adequate and robust regional transmission grid.

In general, WOW appreciates and supports the cost allocation principles published by the WIRES organization and the Transmission Access Policy Study (TAPS) group, and will refer to those often in our response to this question. [11]

WOW supports the "beneficiaries pay" concept but does not believe that this principle negates the argument that many new transmission investments should qualify for broad cost sharing since many facilities in such a network industry have inherently broad public benefits, and groups of system enhancements will represent tradeoffs between various parties that provide a sound basis for sharing the costs of that portfolio of investments. WOW supports allocation of the costs of major facilities and upgrades on a broader, rather than narrower, basis because the beneficiaries will generally be dispersed regionally and not always specifically identifiable with any degree of precision or permanence. Therefore, although cost sharing is sometimes considered the opposite of participant funding, it is actually a variant of beneficiaries pay, but where benefits are estimated to accrue to a wide

[11] WIRES is a non-profit of electric transmission owners, investors, and customers in the North American energy market, and its members include CapX2020, Xcel Energy, FPL Energy, ITC Holdings and the Midwest Independent System Operator. TAPS is an informal association of transmission-dependent electric utilities (primarily public power utilities) located in more than 33 states. For more information on these organizations and links to their publications, see www.wiresgroup.com and www.tapsgroup.org.

geographic area rather than to a small subset of the system.

The WIRES Blue Ribbon Panel on Transmission Cost Allocation listed ten principles for transmission cost allocation. [12] Each of the ten principles is important, but we would like to highlight the following three principles in particular for the UMTDI's deliberation on cost allocation:

- **PRINCIPLE 5. Transmission investments involving baskets of projects that satisfy [robust regional transmission planning principles 1-4] and which emerge as being net beneficial (to either to the region or sub-regions) through the results of robust transmission planning processes should presumptively be candidates for broad, or socialized, cost recovery across the region benefiting from the project(s)**.

- **PRINCIPLE 6. As a rebuttable presumption in transmission planning exercises on a going-forward basis, the larger the size of a proposed new facility, the greater its potential to serve the broadest segment of interstate commerce and therefore the larger the region that should support it**.

- **PRINCIPLE 7. Except for interconnections of specific new generation, loads in the benefiting region (or sub-region) should be allocated the costs of new transmission investment**.

The Transmission Access Policy Study (TAPS) Group expressed a very similar viewpoint in its 2004 white paper:

> "Due to the dynamic and highly integrated nature of the AC grid, high voltage, backbone transmission lines provide benefits beyond the immediate geographic area where they are constructed. In recognition of this fact and to respond to one of the major criticisms of "license plate" pricing (where a subset of customers benefited by such lines must bear the entirety of their costs), FERC should assign the costs of major backbone facilities across all regional load. Broadly spreading "highway" transmission costs not only will match cost imposition to those who benefit, including remote beneficiaries of a grid upgrade, but also will reduce consumer burden and therefore resistance to construction… Failure to spread the costs of regionally significant facilities is likely to cause needed transmission not to be built because of objections from those who would be unfairly assessed its costs, or cause facilities to be built at less-than-optimal size in order to make them affordable. … Regional highway pricing is far better than participant funding, which further localizes upgrade costs on individual market participants. Unlike participant funding, broadly spreading the cost of regionally significant facilities recognizes that transmission upgrades almost always have multiple and changing beneficiaries. It also avoids the difficult and unrealistic

[12] "A National Perspective on Allocating the Costs of New Transmission: Practice and Principles" (Sept. 2007) pages 63-65.

task of trying to differentiate between reliability and economic additions, and then seeking funds from entities willing to speculate on potential congestion revenues."[13]

As to whether it is more appropriate for transmission costs to be allocated to producers or to load, we agree with the WIRES Principle #7 – our initial reaction is that it is more appropriate to allocate costs to load, as load is the ultimate beneficiary of generation and transmission. But we are open to other allocation approaches that effectively result in transmission construction. It can be challenging to state unequivocally that a particular load benefits from a transmission upgrade, or that a new generator is the sole beneficiary of new transmission, which is why we advocate for broad cost sharing across regions.

Renewable resources are willing to pay their fair share, but no single project is financially capable of shouldering the cost of large transmission upgrades. Wind projects are often the parties triggering the need for upgrades, but these individual projects will not be the sole beneficiaries. Also, it is not generally cost efficient for generators to pay for such upgrades. They must then factor upgrade costs into their power prices, which ultimately are paid by load. But the cost of capital for generators can be significantly higher than that for load.

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7. What benefits from transmission additions can be demonstrated, how are they measured, and what is the business case for investments in these facilities?

The benefits of a transmission addition are generally multiple, providing reliability, economic and environmental benefits. These benefits may include:

- Enhanced reliability & system "robustness"—this includes increased ability to take outages for repairs and upgrades, reduced line losses, reduced loss of load probability, reduced need for remedial action schemes
- Congestion relief
- Increased ability to manage variability as wind penetration rates increase and to balance system resources (both load and generation) reliably & cost-effectively
- Access to lower carbon resources and to higher value wind resources, increasing the ability to meet greenhouse gas emissions reduction goals and renewable electricity requirements more cost effectively
- Access to markets for energy when not needed to serve native load

From our perspective, it is generally not important – or even recommended – to try to categorize a particular transmission addition as "reliability" or "economic" project. All projects have some level of each type of benefit. In addition, those facilities that are largely justified on the basis of economic benefits today will become projects considered to serve reliability in the future. Projects with a life of 40 years or more must have benefits considered on a longer-term basis than 10 years. Reliability, economic and environmental

[13] "Effective Solutions to Getting Needed Transmission Built At Reasonable Costs" (June 2004), pages 19-20

benefits should be considered for any type of project being proposed.

Likewise, the benefits of each particular transmission addition should not be considered in isolation. Instead, the costs and benefits associated with a basket of projects could be considered in total, and the business case made for the group of projects. Looking at each particular transmission addition in isolation likely leads to underestimating the net benefits of the projects, and has led transmission owners to under-invest in transmission infrastructure, to the detriment of the overall electric grid and retail ratepayers. We suggest consideration of the SPP Regionally Beneficial Portfolio.[14] SPP's approach, consistent with WIRES' suggestions, allows for "'baskets' of investments with broad benefits accruing to regions" to qualify for regional cost sharing if the net cost benefit ratio of the *set* of transmission upgrades meets their requirement. We support this approach of evaluating the benefits of groups of projects together to allow "relatively broad allocation of transmission costs among regional beneficiaries and – if and where appropriate – among sub-regions."[15]

WOW thanks the UMTDI for the opportunity to comment on these critical questions, and we look forward to working with the members of the UMTDI and with other stakeholders to ensure the UMTDI is the successful initiative we all want and need it to be. If you have additional questions for WOW, please feel free to contact Beth Soholt, WOW Director (bsoholt@windonthewires.org) or Mike Bull, WOW Regional Policy Manager (mbull@windonthewires.org).

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[14] Southwest Power Pool, FERC Docket No. ER08-1419, August 15, 2008.

[15] WIRES Blue Ribbon Report, page 3.