INDUSTRIAL COMMISSION OF NORTH DAKOTA
NORTH DAKOTA TRANSMISSION AUTHORITY

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Jack Dalrymple
Attorney General
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Agriculture Commissioner
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Delivered electronically: Congestionstudy2012@hq.doe.gov

On behalf of the North Dakota Transmission Authority (NDTA) I am pleased to submit the following comments in response to the U.S. Department of Energy's (DOE) request for information related to the DOE *2012 National Electric Transmission Congestion Study*. The NDTA is comprised of the members of the North Dakota Industrial Commission and includes Governor Jack Dalrymple, Attorney General Wayne Stenehjem and Agriculture Commissioner Doug Goehring. I serve as the director of the NDTA.

The NDTA was created by the North Dakota Legislative Assembly in 2005. Since its inception the Authority's mission has been to facilitate the development of transmission infrastructure in North Dakota. The Authority was established to serve as a catalyst for new investment in transmission by facilitating, financing, developing and/or acquiring transmission to accommodate new lignite and renewable energy development. The Authority is a builder of *last resort*, meaning private business would have the first opportunity to invest in and/or build additional needed transmission.

North Dakota is blessed with abundant natural resources including coal, oil and gas, hydropower, biomass and wind. We have 1,400 MW of installed wind capacity with 6,000 additional megawatts of permitted or announced development. The Missouri River provides the state with 500 MW of installed hydroelectric capacity, while the state's lignite industry provides 4,000 MW of baseload generation. The future development of these natural resources is dependent, in part, on the ability of the electric transmission system to export power to markets outside our borders. A continuing detriment on our ability to export power is transmission constraints which limit the export from North Dakota to 2,080 MWs of electrical power across the North Dakota Export Constraint (NDEX). The State of North Dakota continues to work with transmission operators, owners and other interested parties to enhance transmission infrastructure in order to improve the NDEX.

Before addressing your questions, a little background regarding transmission activity in our area may be helpful. Regional transmission planning and reliability planning for North Dakota and the region are provided by three separate entities.

- The Midwest Independent Transmission System Operator (MISO) coordinates the transmission of electric power across all or parts of 11 U.S. states and the Canadian province of Manitoba, including much of Eastern North Dakota and Eastern Montana. As a Regional Transmission Organization (RTO), MISO is responsible for regional grid management and open access to the transmission facilities under MISO's functional supervision.
- The Mid-Continent Area Power Pool (MAPP) provides regional transmission planning, reliability planning, and transmission tariff services coordination. MAPP is an association of electric utilities and other electric industry participants operating in all or parts of the following states and provinces: Iowa, Minnesota, Montana, Nebraska, North Dakota, and South Dakota.
- The Integrated System (IS) of Western Area Power Administration (WAPA), Basin Electric Power Cooperative (Basin Electric) and Heartland Consumers Power District consists of 9,387 miles of interconnected high-voltage transmission lines (1,494 miles of line owned by Basin Electric) for delivering power from federal hydroelectric plants and plants owned by the IS participants. The IS serves a high-voltage transmission grid in the upper Great Plains region of eastern Montana, North Dakota and South Dakota.

While each of these entities plays a critical role in ensuring the reliability and stability of the transmission system serving North Dakota, they also add to the complexity of the transmission landscape in our state.

Question # 1 – *Pertinent studies DOE should review as part of its evaluation of transmission congestion in North Dakota or the region.*

The following is a list of studies that should be reviewed as part of the DOE evaluation:

A) MISO Interconnection Queue
B) North Dakota DPP Cycle 6 & 7 Definitive Planning Phase Study (MISO)
C) MN Group 5 Generator Interconnection System Impact Study (MISO)
D) MAPP/MISO Seams Study (Final expected shortly)
E) MISO/Brattle Group capacity deliverability study (Final expected shortly)
F) MISO 2011 Midwest Transmission Expansion Plan (MTEP 11) with MVP Portfolio Analysis Report and Top Congested Flowgate Study

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Question # 2 – *Actions North Dakota agencies have taken since the publication of the 2009 study that you think DOE should be aware of as it prepares the 2012 study.*

The State of North Dakota has been actively engaged in a number of activities relevant to the study of congestion in our region. Included in these activities is participation in the following studies:

- ***Upper Midwest Transmission Development Initiative (UMTDI)*** – In 2008 the Governors from North Dakota, South Dakota, Minnesota, Wisconsin and Iowa initiated a study to determine the feasibility of upgrading and/or constructing new transmission in the region. The UMTDI study not only identified the location of energy zones within each of the member states, but also evaluated ways to streamline the permitting and siting processes in each state and tackled the difficult issue of how to allocate the enormous costs associated with the build-out of transmission. The UMTDI issued its final report in October 2010.

- ***Regional Generation Outlet Study*** – The Regional Generation Outlet Study (RGOS) sponsored by MISO evaluated the impact of state specific renewable portfolio standards on MISO operations, specifically focusing on wind development. Phase I of the RGOS process focused on transmission needs in Minnesota, Iowa, Illinois and Wisconsin, while Phase II considered renewable portfolio standards in Michigan, Illinois, Missouri, and Ohio. The RGOS Phase II study incorporated the Phase I results into the design of a MISO system-wide build-out that potentially will increase transmission capacity to accommodate state renewable portfolio standards. As part of the RGOS process an initial set of lines common to all three scenarios were identified for purposes of the next step in the MISO planning process.

- **Multi-Value Projects (MVP) Task Force** – With the RGOS study results in hand MISO established the MVP Candidate Task Force to evaluate the feasibility of the "starter project" lines identified as being common to all three RGOS transmission expansion scenarios. The new MVP category was designed to facilitate the interconnection of location-constrained resources (renewable and traditional generation) in the MISO footprint. The process identified the next and most immediate step to transmission investment – a set of robust Candidate MVPs designed to address current renewable energy mandates and the regional reliability needs of its members. The significance of a line being identified as an MVP line is directly related to how the cost of the transmission line will be allocated.

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- **CapX 2020** - The state also monitored the activities of the CapX 2020 program. CapX2020 is a Minnesota-based joint initiative of 11 transmission-owning utilities to expand the electric transmission grid to ensure continued reliable and affordable service. The lines identified in the first phase of the effort include:

  Bemidji-Grand Rapids, 68 miles, 230-kV
  Fargo-St. Cloud-Monticello, 250 miles, 345-kV
  Hampton-Rochester-La Crosse, 150 miles, 345-kV
  Brookings County-Hampton, 200 miles, 345-kV

  Of particular interest to North Dakota is the Fargo-St. Cloud-Monticello line. This project is designed to alleviate electric reliability concerns in the St. Cloud, Alexandria and Red River Valley areas, as well as meet the region's projected electric growth and provide an outlet for new generation. The North Dakota Public Service Commission (ND PSC) has granted an advance determination of prudence for the Fargo – St. Cloud – Monticello line.

Question # 3 – *Metrics North Dakota agencies or others have used in gauging the existence or significance of transmission congestion in your State or region.*

Our response to this question is included in our response to Question # 4.

Question # 4 – *Obstacles to removal or mitigation of significant transmission congestion.*

The lack of present or historic congestion (as evidenced by curtailments or congestion costs) does not necessarily mean that a critical constraint is absent. It is not unusual for past and present uses to roughly match the transmission capacity across long-standing constraints. The NDEX is a long-standing constraint in the this region, which is frequently studied and for which operational procedures and Special Protections Schemes (SPS) have been put in place to manage the constraint to avoid a reliance on Transmission Loading Relief (TLR).

Transmission-owning utilities in the upper Great Plains region have installed numerous small and medium-scale transmission expansion projects, including Flexible AC Transmission System (FACTS) technology to increase the capacity of the existing backbone system to its limits. Additionally, very sophisticated special protection schemes and operating procedures have been deployed voluntarily to fully utilize the existing capacity. However, there is consensus among transmission planning and operations personnel that more similar control schemes or operating techniques will not alone provide significant new transmission capacity.

As a result, historic indicators of congestion, such as frequent calls for TLR or high congestion costs may not reflect the presence of contingency-based constraints where, as in the case of North Dakota/South Dakota/Minnesota, the management tools have become much more sophisticated. Automatic generation runback schemes and generation tripping schemes that function in the event of a first contingency loss of a key transmission element permit full utilization of the constraint interface and offers the most efficient and effective relief of a potential reliability threat.

Additional transmission will make the system more robust and increase reliability. Thus, projects like the CapX 2020, Minnkota Power Cooperative's 345 kV line and the MISO MVP lines are important additions for the future stability of the regional system. Yet these lines are only just now beginning to be constructed and many of the MISO MVP lines are still on the drawing board. As such, the region still faces situations where electrical generation in North Dakota is curtailed when certain transmission lines are out of service in the region.

New transmission lines will improve the reliability of exporting existing generation out of North Dakota into the surrounding states. In addition, as new energy resources are developed in the North Dakota it is essential that new generation outlet transmission be constructed to maintain a high degree of reliability and a robust electrical network in the region. Presently interconnection difficulties hinder wind development in our state and remain a problem for future clean coal projects. While the MISO interconnection queue process has improved, it is still overwhelmed with wind interconnection requests from the Upper Great Plains region. For instance, interconnection requests to the MISO queue from projects in Minnesota, South Dakota and North Dakota exceed 14,000 MW. During the last few years North Dakota wind projects have bypassed the long wait of the MISO queue by interconnecting through the IS or MAPP. Opportunities for future non-MISO interconnections are now limited.

On behalf of the NDTA, we appreciate the opportunity to provide this background information. We look forward to continuing a dialogue with the DOE as you conduct the study of the status of congestion on the Nation's electric transmission networks.

Sincerely,

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