

U.S. Department of Energy Quadrennial Energy Review  
Second Installment  
Generation and Transmission: How Can We Plan, Build, and  
Operate the Appropriate Amount for Future Needs

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Written Comments of Jeff Gust, Vice President, Compliance and Planning  
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Good morning, I am Jeff Gust, Vice President, Compliance and Planning for MidAmerican Energy Company. Thank you for the opportunity to be here today. MidAmerican Energy Company, a Berkshire Hathaway Energy Company, provides safe, reliable, and affordable electric service to approximately 752,000 electric customers and 733,000 natural gas customers in a 10,600-square mile area in Iowa, Illinois, South Dakota and Nebraska.

**Evolving Resource Mix, Organized Markets and Transmission Planning**

MidAmerican is experiencing a dramatic change in our generation resource mix. When MidAmerican installed its first wind turbines in 2004, like many Midwestern energy providers, we were heavily reliant on fossil-fuel generation. By the end of 2016, MidAmerican will have more than 4,000 MW of wind generation installed which will serve approximately 58% of our retail customers' energy needs with renewable energy. With the completion of our recently announced Wind XI projects, an additional 2,000 MW of wind generation will be installed by the end of 2019 bringing the total energy to 85% of our customer's needs. This shift is a proactive response to policy changes and customer demands for more sustainable energy options.

Organized markets will continue to play a significant role by making efficient unit commitment and economic dispatch decisions across a broad regional area. A well-organized market should also facilitate capacity market transactions to ensure an appropriate amount of resources are available to meet future load requirements. The organized markets should continue to work together to eliminate "seams" issues that exist between them, and should focus anew on interstate seams issues that may arise. For example interstate seams issues may arise in response to the Environmental Protection Agency's Clean Power Plan, where states within a single organized market may elect either rate-based or mass-based compliance measures. However, organized markets should not administer emissions trading programs unless stakeholders agree that they are uniquely positioned for that task.

Finally, the organized market must not be too prescriptive, but should anticipate future products and needs, such as those needs that may arise as new carbon emissions encourage more natural gas and renewable resources. Thus, resource diversity will be the outcome of policy and proper market design.

From a transmission system reliability perspective, MidAmerican is participating, along with several other MISO transmission owning members, in the construction of a number of Multi-Value Projects (“MVPs”). The MVPs in Iowa include over 350 miles of new 345 kV lines with MidAmerican building approximately 220 miles of new transmission lines. These transmission projects are crucial to maintaining reliability as the new wind resources are typically not located where traditional generation resources exist. At the same time, a number of older coal-fired power plants have retired in response to environmental regulations. Those retirements have resulted in significant local area transmission projects to maintain reliability.

As a MISO member, MidAmerican believes RTO-wide planning and cost allocation of projects (such as the MVPs noted above) are important components of building the necessary transmission facilities to reliably and efficiently accommodate a changing resource mix. MidAmerican’s experience has been that state siting processes are generally adequate to site needed transmission lines which benefit residents of the states in which the lines are located. We have yet to see the need for federal siting processes in our area but do not rule out the possibility that federal siting may be needed as a backstop for certain projects. Proactive planning and the ability to site transmission lines reduce uncertainties for generation resource developers, which encourages new resources to locate in areas that may require them.

As generator owners make new resource decisions to comply with new carbon emissions restrictions, or to replace aging plants, the generator interconnection approval processes should be reviewed and streamlined. While it is important to evaluate new resources to maintain reliability, it is also important to ensure that the study process itself and the amount of time taken for the study, is not an impediment to new resources coming on line.

### **Innovation and New Technologies**

In the transmission environment, MidAmerican continues to explore innovation and new technologies. For example, when siting the MVPs, MidAmerican utilized existing right-of-ways, including the rights-of-way of neighboring utilities. The resulting double-circuit construction in rural areas was unheard of 15 years ago, but is now considered an option to have less impact on land use, landowners and the environment. New technologies such as battery storage are also being considered as alternatives to traditional transmission and distribution facilities. New distribution automation capabilities may need to be developed to provide customers with the services they require should distributed generation penetration levels increase.

### **Increasing Interdependencies**

The pace of technology innovation and forecasts of reduction in costs for new solar and battery storage, in conjunction with new carbon emissions rules, is expected to quicken the pace of evolution in the resource mix. Appropriate forethought with respect to transmission and distribution planning, and wholesale market designs are key factors that will lead to success as the evolution occurs. Proactive transmission planning leads to a more efficient interconnection process for new resources. Attention to market design and seams issues at the transmission level, and at the distribution level, will lead to efficient new resource decisions that impact the regional resource mix and the reliability of the system.