

**SPP-RSC/MISO OMS Questions Regarding Seams Whitepaper**  
**January 10, 2019**

Invenergy is North America's largest privately held company that develops, owns, and operates large-scale renewable and other clean energy generation, energy storage facilities, and electric transmission facilities across North America, Latin America, Japan and Europe. To date, the Company has developed more than 20,046 MW of large-scale wind, solar, natural gas, and energy storage facilities. This includes more than 10,896 MW of projects in operation, with more than 9,150 MW contracted or in construction. Several of these facilities are located within the footprint of the Southwest Power Pool ("SPP") and the Midcontinent Independent System Operator ("MISO"), and Invenergy has several interconnection requests to interconnect new generating facilities to both regions. Invenergy is a Market Participant in SPP and is a Member of MISO.

Invenergy appreciates the work and attention brought to the SPP/MISO Seams Issues by both the SPP Regional State Committee ("RSC") and the Organization of MISO States ("OMS"). Invenergy also appreciates the opportunity to answer questions raised by RSC/OMS. The answers below seek to address the questions raised by the RSC/OMS and are not a comprehensive review of all issues and positions that Invenergy seeks to advance with regard to the SPP/MISO seams.

**1. What do you believe to be the single most important/impactful seams issue and what barriers are preventing resolution? If applicable, include two to four additional priority items the regulators should focus on.**

Invenergy believes there are two very important and impactful seams issues that can be resolved.

First, the issue of Transmission Planning needs to be addressed to deliver the most-effective solutions for seams issues. This issue is not just an SPP/MISO issue, it is an issue across all RTOs and seams between the RTOs and is arguably the single most impactful issue in delivering cost-effective solutions for customers, and, hopefully, for ratepayers. To date, no large interregional project has ever been planned between the SPP/MISO seam, although the economics would suggest the cost-effectiveness of such a solution. The SPP/MISO seams whitepaper properly details improvements made and that can be made in the real-time operations of seams. However, at some point, real-time operations cannot compensate for fundamental transmission planning failures.

Second, the issue of Interconnection in and among the SPP/MISO seam needs to be addressed to ensure that the most cost-effective solutions and projects are advanced and available to serve customers and participate in market. Previous study results to interconnect projects in and along the seam show substantial SPP upgrades required on flowgates as "affected systems" due to MISO projects that were under construction at the time. However, MISO projects should not have to pay for upgrades for SPP problems on flowgates and vice versa. For the particular projects in question, the "affected systems" issue was resolved because study-specific methodologies were changed, but later interconnection queue clusters will again face the same problem. The flaw appears to lie in the way SPP models MISO generation. Rather than each system perhaps incorrectly modeling the other, SPP and MISO should resolve their differences in modeling assumptions to resolve the seam flowgate issue, or keep the issue and not assign costs to interconnection customers but rather manage the flowgate issue as a real-time operations component. Ratepayers should be better off if SPP and MISO manage their systems more

efficiently, which should also lead to more market opportunities to develop cost-effective generation or transmission projects.

**2. How should the RTOs weigh the benefits of more efficient seams operation against focusing on maximizing intra-RTO efficiencies and operation?**

SPP and MISO's systems are so intertwined, with several interties and within the same Interconnection, that the organizations must operate seams efficiently to maximize their own systems. Generally, significant progress has been made in seams and intra-RTO operations, and the focus in both areas should be long-term and large-scale planning. Invenergy does not agree that there is necessarily a conflict between the two sets of efficiencies.

**3. What areas of the whitepaper do you agree and disagree with? Why?**

Invenergy generally agrees that barriers to interregional projects need to be removed, such as the \$5 million minimum and triple hurdle. Both RTOs have made progress on these issues and their efforts should be commended.

However, Invenergy generally disagrees that the MISO North-South Regional Directional Transfer Limit is acceptable. Under this construct, MISO essentially operates as two separate RTOs for operations. It is not uncommon for low-cost generation to be trapped in the North, while simultaneously the South experiences maximum generation events. There are clear customer and ratepayer efficiencies to be gained from reforming the Directional Transfer Limit and any such reform should be included in any SPP/MISO Seams discussion.

**4. Are there seams issues that you believe were left out?**

One seams issue that the whitepaper does not sufficiently address is the difference between RTOs on how costs are allocated among customers. SPP consumption pays zonal prices, while MISO consumption pays nodal prices. A comparison of how this difference impacts real-time operations and planning would be useful to any further discussion and resolution of seams issues.

Also, due to high exit fees, the SPP stakeholder process is not as thorough, or inclusive as MISO's. SPP is unable to offer solutions that reflect the full range of problems and solutions that its Market Participants experience because many are deterred from becoming voting Members. While this issue is receiving Federal Energy Regulatory Commission ("FERC") attention due to the American Wind Energy Association's ("AWEA") complaint, any discussion of seams issues and solutions should keep in mind the lack of voting membership in SPP for many of the affected market participants. This lack of membership means that issues and solutions identified by SPP may not be representative of the issue or solutions identified by the generators most affected by seams.

**5. What seams issue(s) require additional analysis and study prior to solution identification? What should the goal of such an analysis/study be and what metrics or other measurable information should it include?**

Since SPP and MISO are unable to get their models to work together in a seamless fashion, they should model the Eastern Interconnection as a whole to understand how their systems, as parts of the Eastern Interconnection, are interrelated and affect each other. The value of competitive transmission projects across RTO seams should also be examined as part of this modelling. Today, under MISO and SPP's

limited modeling, neither RTO accounts for all the value that ratepayers could obtain from transmission development that would enable generation development in various regions. Although this may require the cooperation of several Reliability Coordinators to accurately model the Eastern Interconnection, similar modeling has been done for the Western Interconnection by the Western Electricity Coordinating Council ("WECC").