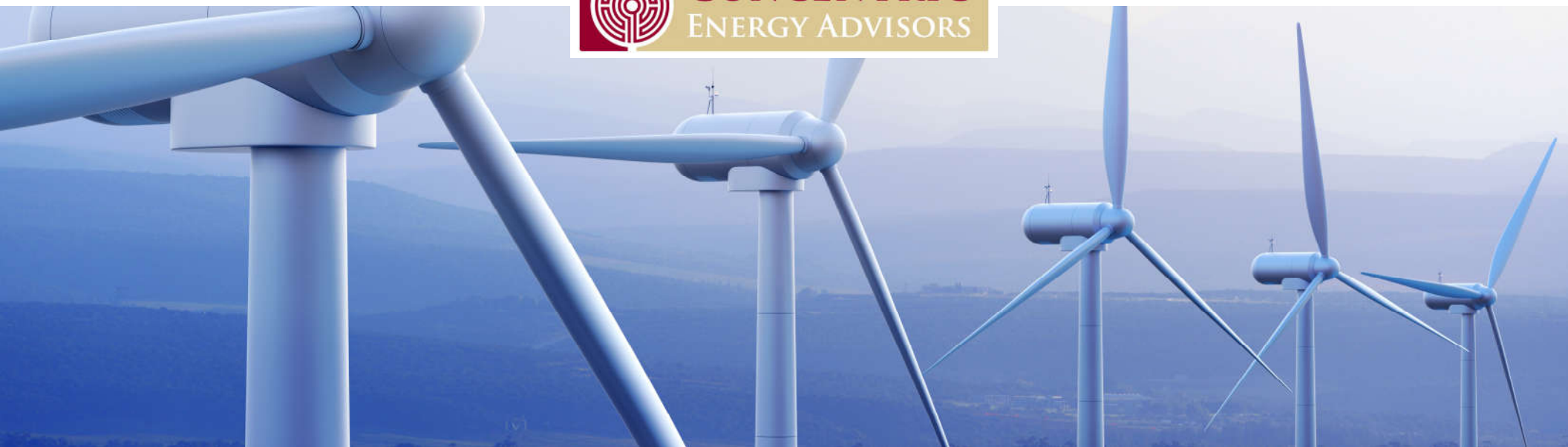


**Interregional Transmission
Development – A Complex Problem
with Challenging Solutions**

Presented to:
OMS & SPP RSC
Seams Liaison Committee
April 5, 2021



Agenda

1. Introduction & Overview
2. Current Practices
3. Planning Challenges
 - a. Multiple Models
 - b. Benefit Assessment
 - c. Futures Assumptions
 - d. Competing Interests
4. Potential Solutions

Introduction



Introduction:

The Study:

- Engaged by American Council on Renewable Energy (“ACORE”) with American Clean Power Association (“ACP”) and Solar Energy Industries Association (“SEIA”)
- Detailed regional and interregional planning processes in MISO, SPP and PJM
- Concentric conducted 20 candid interviews with key market participants.
 - 4 Investor-Owned Utilities
 - 2 Consultants specializing in electric transmission
 - 1 Infrastructure developer
 - 9 Renewable energy developers
 - 2 Transmission developers
 - 2 Clean energy organizations
- Report identified key deficiencies in planning and cost allocation processes that inhibit renewable energy development in those regions as well as potential solutions

Introduction:

Report Findings

- Centrally coordinated regional transmission planning needed
- Interregional planning requires aligned models and methodologies
- Future scenarios need to better reflect expected renewable energy demand and growth
- Transmission benefit metrics should be expanded and standardized
- Resource zone identification would help optimize planning, facilitate competition, and benefit consumers
- Planning models should better reflect the likely dispatch of resources and technologies
- Fairly allocating costs of new transmission among beneficiaries requires greater scrutiny or wholesale reform

Introduction:

Renewable generation has become trapped within its respective regions

Primarily due to:

- Multiple interregional planning models
 - Different benefits assumptions
 - Different acceptance thresholds
 - Different futures assumptions
 - Different priorities
- Rate Pancaking
- Affected Systems

INTERVIEW QUOTE:

“Until there is one single interregional process with a single hurdle and shared assumptions, I don’t see process as it stands today really producing much.”

– Renewable Energy Developer

The ongoing MISO/SPP joint seams study was commenced to address the challenges identified above. There is great hope that the initiative will result in new interregional projects across the MISO/SPP seam. Several respondents identified the regional seams study, if performed at regular intervals, to be an industry best practice that would improve each regions' understanding of interactions and opportunities with its neighboring region.

Current Practices

Current Practice:

FERC Order 1000

- Established that RTOs engage in interregional planning with neighboring RTOs
 - Coordinating and sharing results of respective regional transmission plans
 - Jointly evaluate interregional transmission facilities
 - Develop procedures to identify and resolve differences in data, models, assumptions, transmission planning horizons, and criteria for joint evaluation
 - Left each pair of neighboring regions discretion on how to implement
- Costs to be allocated according to following 6 principles
 - Roughly commensurate with benefits
 - No involuntary cost allocation to non-beneficiaries
 - Required B/C ratio cannot exceed 1.25
 - Costs must be allocated within transmission planning region (or pair of regions)
 - Transparent method for identifying benefits and beneficiaries
 - May be different benefits for different types of transmission facilities

Current Practice:

Interregional Planning Processes

- FERC 1000 required interregional planning but left how to implement to RTO's discretion
- There is no mandate for centrally coordinated planning or an "overlay study"
- Each RTO relies on its own Futures assumptions and B/C calculations
- To date the MISO CSP with SPP has looked at current constraints and current generation and has tried to develop projects that reduce economic congestion
 - MISO recently commenced a joint study with SPP targeting interconnection issues on the seams to hopefully overcome the shortcomings of the prior process
- To date, interregional transmission expansion has been virtually non-existent
- Opportunities for efficiencies from intercontinental transmission are being missed

Reconciling differences between interregional processes and models of neighboring RTOs will be difficult. Stakeholders applauded MISO and SPP's efforts to analyze and improve interregional transmission planning processes.

Planning Challenges

Challenges:

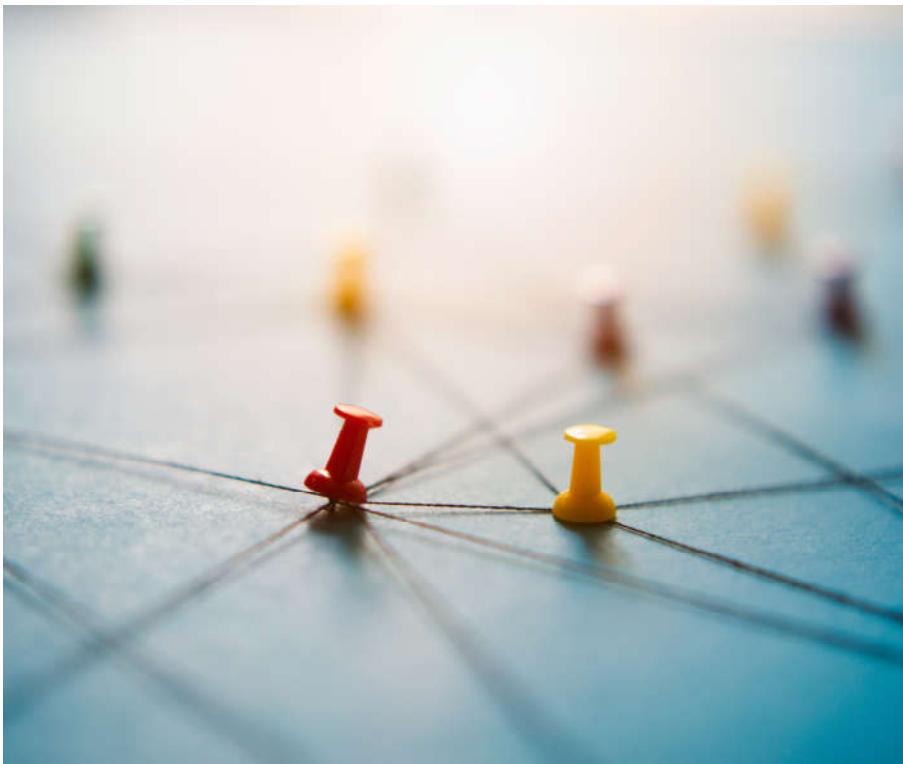
Multiple Interregional Planning Models

- Each RTO has own models, operational practices, and differing priorities
- Triple hurdle (not an issue for MISO)
- Lack of coordination between RTOs
- FERC's 2019 Order allowing MISO and SPP to move away from joint planning model



Challenges:

Different Benefits Assumptions



- Assessment of project benefits can vary by state, and by RTO
- Different benefit calculations across RTOs
- APC metrics do not capture the full range of project benefits
- Different acceptance thresholds
- Achieving consensus on new benefit metrics will be difficult

Challenges:

Different Futures Assumptions

- Transmission planning processes consistently under forecast renewable generation
- Planners do not look beyond firm commitments in the interconnection queues to third party forecasts, trends or targets
- Planners may be too conservative in modeling the dispatch of renewable capacity
- RTOs may have different views of renewable futures





Challenges:

Different Priorities

- Transmission owners (and loads) resist transmission exported to other regions
- RTOs have resisted transmission socialized to the RTO's region from projects in other regions
- Agreement between RTOs on costs and benefits will be challenging
- Allocation of costs should be commensurate with benefits



Potential Solutions

Potential Solutions:

Interregional Planning

- Engage in regular joint planning (e.g., MISO/SPP Seams Study)
- Work toward alignment (or standardization) of interregional planning models, assumptions, benefit calculations, acceptance thresholds
- Seek to co-optimize transmission and generation costs, i.e., where do renewable resources exist and what is least-cost transmission solution to bring resources to load
- Integrate reasonable futures assumptions into interregional planning models taking long term forward view of planning horizon

Closing Remarks:

Interregional transmission planning is essential for achieving renewable energy goals

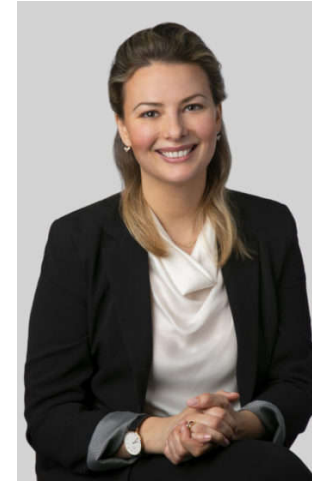
Efficiencies will be derived from better balanced loads over a broader distance, better interconnected regions, integrating and to some extent standardizing interregional planning processes, and co-optimizing transmission planning and generator interconnection processes. To achieve this outcome, centrally coordinated planning will be required, with a focus on interregional opportunities.





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