

## NAWEA 2013 Symposium, Boulder, CO

### 5A: Electrical Transmission Session Summary and Highlights

Chairs: J. Charles Smith, Miguel A. Ortega-Vazquez, David Berry

#### Speakers:

1. Lynn Hecker, MISO: *Transmission Planning for Variable Generation*
2. Warren Lasher, ERCOT: *A Transmission Planning Case Study for Wind Integration – CREZ in ERCOT*
3. Keegan Moyer, WECC: *Interconnection-Wide Transmission Planning Developments in WECC*
4. Bob Zavadil, Enernex: *Dynamic Model Development and Validation for Stability Studies*

The electrical transmission session focused on the advances in transmission planning in the three electrical interconnections in the US during the past 6 years. The session was able to convey the new approaches to transmission planning for designing cost-effective systems which can move renewable energy over long distances to load centers, and the critical role transmission plays in enabling markets to operate effectively.

The major change from the past is that with the stochastic nature of wind power generation, in order to design a reliable and cost-effective system, it is now necessary to perform multiple years of 8,760 hourly production cost simulations instead of doing reliability analysis for the peak load hour of the planning year.

The session presented a combination of analytical approaches and some practical case studies from the Eastern Interconnection, the Electric Reliability Council of Texas, and the Western Interconnection. The seven-step transmission expansion planning process developed and implemented by the Midcontinent Independent System Operator (MISO), resulting in the adoption of the Multi-Value Projects (MVP) in MISO, was of particular interest.

The topic of dynamic wind plant models for transmission planning studies was also covered. It became clear from the session that transmission planning is an iterative process incorporating engineering, economics, policy and politics, and is a process subject to change as economic conditions, legislative and regulatory mandates, and generation expansion plans change. And it is an essential but often neglected component of a successful wind integration effort.