



WORKSHOP ON UTILITY WIND INTEGRATION STUDIES: MODELS AND METHODS

June 24-25, 2010
Crowne Plaza Northstar
Minneapolis, MN

PROGRAM AGENDA

Workshop Purpose

The purpose of this workshop is to:

- Present, review, and critique the utility wind integration study work that has been done to date, focusing on the most recent studies
- Develop a better understanding of the strengths, weaknesses, and differences among the current generation of wind integration study models and methods
- Develop a better understanding of the needs for the next generation of wind integration studies and the associated models and methods.
- Continue an ongoing dialog between the power system engineering and wind forecasting communities.
- Develop a consensus on important issues where possible

Workshop Audience

The intended audience for this workshop is utility and wind industry personnel who perform or use the results of wind integration studies, as well as organizations that fund and manage wind integration studies.

Thursday, June 24

7:00 a.m. – 8:00 a.m.

Registration & Continental Breakfast

Location: Ballroom Lobby – 7th Floor

8:00 a.m. – 5:00 p.m.

Workshop

Location: Great Lakes Ballroom

8:00 a.m. – 8:15 a.m.

Opening Session

Background and Introduction to Workshop Purpose
Charlie Smith, Utility Wind Integration Group

8:15 a.m. – 9:00 a.m.

Big Picture – Where Have We Been, What Have We Learned, and Where Are We Going

Keynote Speaker: Michael Milligan, NREL

A series of wind integration studies conducted over the past 8 years has culminated in a wind integration study for each of the Eastern Interconnection, Western Interconnection, and ERCOT, as well as a number of smaller regional and sub-regional studies. What have we gleaned from these studies in terms of the data requirements, the model requirements, the critical assumptions, and the limitations of the methods and results? Have we gotten all we can from the current generation of studies? What should the next generation of studies concentrate on? Clearly, the data requirements for the future studies should be driven by the choice of tools and methods.

9:00 - 10:00 a.m.

Panel 1: Wind Plant Output Forecasting Data and Methods Requirements - Panel Discussion

Panel Moderator: Debbie Lew, NREL

Forecast and actual wind plant output are critical input to the wind integration study. Three forecast providers will discuss different aspects of the problem.

- AWS Truepower
 - 3TIER
 - Windlogics
- John Manobianco
Pascal Storck
Mark Ahlstrom

10:00-10:30

Break

Location: Ballroom Lobby

10:30-12:00 p.m.

Panel 2: Wind Plant Output Forecasting Data and Methods Requirements - Panel Discussion with Integration Study Practitioners and Participants (*continuation from previous session*)

Panel Moderator: Matt Schuerger, ESCS, NREL Consultant

The discussion from Panel 1 will be continued with the addition of the study practitioners who use the data in the integration study methods and tools.

- AWS Truepower
 - 3TIER
 - Windlogics
 - GE
 - EnerNex
 - CRAI
- John Manobianco
Pascal Storck
Mark Ahlstrom
Gary Jordan
Bob Zavadil
Bruce Tsuchida

12:00 p.m. – 1:00 p.m.

Lunch

Location: Skygarden (Calhoun Room if inclement weather)

1:00 p.m. – 3:00 p.m.

Panel 3: Similarities and Differences between Renewable Integration Analytical Approaches – Panel Presentations and Discussion

Panel Moderator: Ed DeMeo, RECS, NREL Consultant

This panel will focus on an overview and comparison of the GE and EnerNex analytical approaches and critical assumptions in the Eastern and Western Interconnection studies, and a comparison and discussion of the differences in the results produced.

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| • Bob Zavadil, EnerNex | EnerNex Approach |
| • Nick Miller/Gary Jordan, GE | GE Approach |
| • John Lawhorn, MISO | Focus on Plexos |
| • Erik Ela, NREL | Reserves Quantification – Global View |

3:00 - 3:30 p.m.

Break

Location: Ballroom Lobby

3:30 p.m. – 5:00 p.m.

Panel 4: Panel Discussion with Wind Integration Practitioners and Workshop Participants (*continuation from previous session*)

Panel Moderator, Kevin Porter, Exeter Associates

This session will build on the discussion from the previous session, and discuss the pros and cons of trying to isolate and identify a wind integration cost.

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| • Bob Zavadil, EnerNex | Integration cost drivers |
| • Gary Jordan, GE | Cost/benefit or cost |
| • Bart McManus, BPA | Owner vs buyer viewpoint |
| • Ken Dragoon | Wind Integration Costs – fact or fiction? |
| • Ken Schuyler, PJM | Calculating cost – necessary or productive? |

5:00 p.m.

Adjourn

6:00 p.m. – 7:30 p.m.

Reception

Location: Skygarden (Fireside & Minnetonka Lounge if inclement weather)

Friday, June 25

7:30 a.m. – 8:00 a.m.

Continental Breakfast

Location: Ballroom Lobby

8:00 a.m. – 3:15 p.m.

Workshop

Location: Great Lakes Ballroom

8:00 a.m. – 10:00 a.m.

Panel 5: What to Do in the Next Generation of Studies – Panel Discussion

Panel moderator: Tom Acker, NAU

This panel will explore alternate paths of digging deeper into the 20-30% scenarios, vs exploring some new paths with higher wind energy penetrations.

- Dick Piwko, GE Digging into the study details
- Abe Ellis, WECC Path to 30%; transmission implications
- Bob Zavadil, EnerNex Path to 30%; life after EWITS
- Warren Lasher, ERCOT ERCOT experience – moving forward
- Lynn Hecker, MISO Transmission for 30%
- Gary Moland, Ventyx Linking reg'l and nat'l studies; modeling tools
- Walter Short, NREL High penetration and carbon goals

10:00 a.m. – 10:30 a.m.

Break

Location: Ballroom Lobby

10:30 a.m. – 12:00 p.m.

Panel 6: What to Do in the Next Round of Studies – Panel Discussion cont.

Panel Moderator: Charlton Clark, DOE

This panel will explore the need for selected sensitivity studies in more detail: energy storage, demand response, baseload plant cycling costs, fuel prices, and wind generation impact on carbon reduction.

- Ken Dragoon, RNP Potential for load control and DR
- Brendan Kirby, Consultant A deeper look at storage
- Gene Danneman, Xcel Baseload unit cycling costs
- Jay Caspary, SPP Carbon reduction
- Udi Helman, CAISO Unit commitment and economic dispatch
- Chuck Liebold, PJM Transmission analysis level of detail

12:00 – 1:00 p.m.

Lunch

Location: Calhoun Room

1:00 - 2:00 pm

Panel 7: Where Do We Go from Here - Panel Discussion

Panel Moderator: Brian Parsons, NREL

This panel will examine the question of whether or not we are reaching a point of diminishing returns in wind integration studies, is there still more to learn, and what is the right balance between pushing the wind penetration limits and digging deeper into existing scenarios. What is the appropriate role for the different parties, what is the outlook for continued government funding support, do we see any consensus emerging from the discussions?

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| • GE | Dick Piwko |
| • EnerNex | Bob Zavadil |
| • NYISO | John Adams |
| • NREL | Michael Milligan |
| • UCD | Mark O'Malley |
| • DOE | Charlton Clark |

2:00 - 3:00 pm

Panel 8: How Do We Interface with Other Planned/Related Efforts - Panel Discussion and Wrap-up

Panel Moderator: Steve Beuning, Xcel

Recognizing that wind integration studies have pushed the limits on traditional expansion planning techniques, this panel will explore what we have learned from the CREZ, EWITS and WWSIS studies that should inform the EIPC and WECC transmission planning efforts, as well as the pan-Canadian wind integration study.

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| • SPP | Jay Caspary |
| • MISO | Dale Osborn |
| • ERCOT | Warren Lasher |
| • EPRI | Daniel Brooks |
| • CanWEA | Tom Levy |

3:00 p.m.

Closing Comments

Charlie Smith, UWIG