



WORKSHOP ON WIND FORECASTING APPLICATIONS TO UTILITY PLANNING AND OPERATIONS

February 10-11, 2010
Hotel Albuquerque at Old Town
Albuquerque, New Mexico

PROGRAM AGENDA

Workshop Purpose

This workshop is intended for utility and wind industry personnel associated with producing and using wind plant output forecasts for power system operation.

The workshop purposes are to:

- Explore the practical aspects of the use of wind forecasting models to the scheduling and operation of power systems
- Develop a better understanding of next generation wind forecasting requirements and possibilities in the hour-ahead and day-ahead time frames
- Develop a better understanding of operations planning requirements
- Continue an ongoing dialog between the wind forecasting research, development, applications and user communities.

Wednesday, February 10

7:00 a.m. – 8:00 a.m.

Registration & Continental Breakfast

Location: Franciscan

8:00 a.m. – 5:30 p.m.

Workshop

Location: Franciscan

8:00 a.m. – 8:15 a.m.

Opening Session

Local Welcome

Jeff Mechenbier, Public Service Company of New Mexico

Background and Introduction to Workshop Purpose

Charlie Smith, Utility Wind Integration Group

8:15 a.m. – 9:45 a.m.

Role of Forecasting in Identification of Reserve Requirements

Session Chair: Michael Milligan, NREL

Wind Integration study results generally suggest that most of the cost of wind integration comes about as a result of the additional reserves needed to manage the additional uncertainty introduced by the wind generation. The panel will provide perspectives on the issue from several different points of view.

- Factoring Uncertainty into Operations Mark O'Malley, UC Dublin
- Managing Uncertainty at REE Miguel de la Torre, REE
- Managing Uncertainty in a Wind-Only BA Ken Young, NaturEner
- Cost of Uncertainty Bob Zavadil, Enernex

9:45 - 10:00 a.m.

Break

Location: Franciscan

10:00 a.m. – 11:30 p.m.

Wind Forecasting Requirements Interactive Panel

Session Chair: Ty Bettis, PGE

Forecast users will each make a ~ 5-10 minute presentation that describes a significant forecast issue or question that is currently impacting their operations or operations planning. Forecast users will provide a description of the situation to the forecasters beforehand. A discussion will follow each forecast user's presentation with one or more of the forecast provider panelists first expressing their opinions on the issue(s) raised by the forecast user and then having workshop participants contribute to the discussion.

Information Needed from the Operator:

- What did the forecast show? Day ahead? Hour ahead?
- What actually occurred?
- Why was this particular event such a challenge from the operator's perspective?
- Was this more of an economic concern or a reliability concern?
- How was the forecast used in making an operating decision?

Questions for the Operators (or participants) from the Chair:

- If you had a 'perfect' forecast, how would you use it to make an operating decision in this particular case?
- Given that there is no such thing as a perfect forecast, what types of information (in addition to the forecast) would you like to have, and how would you use this information to make operating decisions?

Questions for the Forecasters (or participants) from the Chair:

- Based on the information provided by the operator beforehand, what caused the event?
- Why was it such a challenge from the forecasting perspective?

- What types of information can be provided now to help operators make decisions in this particular case?
- What types of information/data/research are needed to produce a more accurate (not perfect) forecast in this particular situation?

Forecast User Panelists

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| • ERCOT | David Maggio |
| • BPA | John Pease |
| • Hydro Quebec | Alain Forcione |
| • CAISO | Jim Blatchford |

Forecast Provider Panelists

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|---------------------------|------------------|
| • WindLogics | Mark Ahlstrom |
| • 3TIER | Pascal Storck |
| • CIRA/CSU/Precision Wind | Dusanka Zupanski |

R&D Implications-What Do We Need

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|---------------------------|---------------|
| • What's Missing | Mark Ahlstrom |
| • What Can We Do About It | |

Moderated Discussion

11:30 p.m. – 12:45 p.m.

Lunch

Location: Alvarado A&B

12:45 p.m. – 2:15 p.m.

Wind Ramp Forecasting Requirements Panel

Session Chair: Bill Grant, Xcel Energy

This session will build on the morning session and zero in on wind ramp forecasting in the 0 - 6 hr ahead time frame. The problem will be framed from an operator/forecast user perspective, with a focus on what type of ramp forecast product and performance is needed to be a useful planning tool. A forecaster will then present an overview of the state-of-the-art with a focus on the factors that currently limit ramp forecast performance. Forecast provider panelists will each make a short presentation on what technology/approach (measurement strategies or forecast methods and models) they believe have the greatest potential to improve ramp forecast performance over the next few years on the desired look-ahead time scale. Open discussion with the presenters and participants will follow, with the goal of developing a consensus on what strategies are most worth pursuing in the near-term and how they can be most effectively pursued (funding sources, multi-organization cooperative arrangements such as what was done in AMEMOS in Europe etc.).

Ramp Forecast Product Requirements and Performance Needs

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| • AESO | John Kehler |
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Ramp Forecast State-of-the-Art Overview

- AWS Truewind

John Zack

Ramp Forecast Options for the Future

- Energy and Meteo
- Garrad Hassan – Germanischer Lloyd

Ulrich Focken
Craig Collier

R&D Implications-What Do We Need

- What's Missing
- What Can We Do About It

Justin Sharp, Iberdrola

Moderated Discussion

2:15 - 2:30 p.m.

Break

Location: Franciscan

2:30 p.m. – 4:30 p.m.

Wind Forecasting R&D Activities

Session Chair: Pascal Storck, 3TIER

- Ramp Forecasting – The Meteorology
- Short Term Wind Power Predictions Using Ensembles
- Ramp Forecasting System Development
- ERCOT Wind Forecasting Tool
- Advances in Ramp Forecasting Using Ensemble Data Assimilation
- Rapid Update Cycle Developments

Cathy Finley, Windlogics
Bernie Ernst, Amprion

John Zack, AWS Truewind
John Dumas, ERCOT
Dusanka Zupanski,
CIRA/CSU/Precision Wind
Stan Benjamin, NOAA

4:30 p.m. – 5:30 p.m.

Government Role in Wind Forecasting

Session Chair: Justin Sharp, Iberdrola Renewables

- Research Program Implementation
 - What is the Needed Research Program
 - What Are the Appropriate Government Roles for NOAA, NCAR, NWS
 - DOE roles in renewable resource characterization and forecasting R&D
- Economic Value of Day-Ahead Wind Forecasts for Power Operations with 20% Energy
- Cost of Forecasting R&D for the 20% Wind Scenario

Melinda Marquis - NOAA

Stan Calvert, DOE
Dick Piwko, Gary Jordan, GE

Don Berchoff - NWS

5:30 p.m.

Adjourn

6:00 p.m. – 7:30 p.m.

Reception

Location: Alvarado A&B

Thursday, February 11

7:30 a.m. – 8:00 a.m.

Continental Breakfast

Location: Franciscan

8:00 a.m. – 3:15 p.m.

Workshop

Location: Franciscan

8:00 a.m. – 10:00 a.m.

Integrating Forecasting into Market Operation I

Session Chair: Bob Zavadil, Enernex

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| • Germany | Bernie Ernst |
| • ERCOT | David Maggio |
| • AESO | John Kehler |
| • Midwest ISO | Mike McMullen |

10:00 a.m. – 10:30 a.m.

Break

Location: Franciscan

10:30 a.m. – 12:30 p.m.

Integrating Forecasting into Market Operation II

Session Chair: Dick Piwko, GE

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|---------|-------------------------|
| • Spain | Miguel de la Torre, REE |
| • BPA | John Pease |
| • IESO | Dan Rochester |
| • CAISO | Jim Blatchford |

12:30 – 1:45 p.m.

Lunch

Location: Alvarado A&B

1:45 p.m.

Integrating Forecasting into the EMS and Control Center

Session Chair: Michael McMullen, Midwest ISO

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| • Wind Power Forecasting and Stochastic Unit Commitment | Audun Botterud, ANL |
| • Smart Grid Priority Action Plan for Wind | Erich Gunther, EnerNex |
| • ABB Update | Khosrow Moslehi |
| • AREVA Update | Russ Philbrick |
| • Siemens Update | Jim Waight (inv't) |

3:15 p.m.

Closing Comments

Brian Parsons, NREL