



Wind-Hydro Integration Workshop

PROGRAM AGENDA

March 21-22, 2007

Doubletree Hotel and Executive Meeting Center
Portland, Oregon

Wednesday, March 21, 2007

7:30 a.m. – 8:30 a.m. Registration

8:30 a.m. – 9:15 a.m. Opening Session

Introductions – Charlie Smith, Executive Director, UWIG

Welcome – Rachel Shimshak, Executive Director, Northwest Renewable Project

Opening Remarks – Integrating More Wind in the Pacific Northwest

Eric Markell, Senior Vice President, Puget Sound Energy

9:15 a.m. – 10:15 a.m. Introductory Session

The Building Blocks of Hydro System Operation

Session Chair: Brendan Kirby, Oak Ridge National Laboratory

This session will provide background and perspective on the planning and operation of hydro power systems from around the world, including considerations of maximizing hydro system operating flexibility, what to do when you run out of hydro system flexibility, market participation strategy, availability of planning tools, and how similar issues are being dealt with in different regions of the world.

Multi-Year Hydro System Planning, Scheduling and Operation Fundamentals

From a Pacific Northwest Perspective – Steve Barton, BPA

From a Manitoba Hydro Perspective – Kelly Hunter, Manitoba Hydro

10:15 a.m. - 10:30 a.m. Break

10:30 a.m. – 12:00 p.m. Introductory Session (continued)

Hydro System Planning, Scheduling and Operation Fundamentals

A Hydro Quebec Perspective – Andre Robitaille, Hydro Quebec

A Nordic Perspective – Klaus Vogstad, Agder Energi

Discussion

12:00 p.m. – 1:00 p.m.

Buffet Lunch

1:00 p.m. – 3:00 p.m.

Insights gained from Operations Studies

Session Chair: Bob Zavadil, Principal Consultant, EnerNex

This session will explore study methods, results, and experiences with wind/hydro integration. What are the biggest challenges, what are the most significant constraints, how do you deal with them? What impact does the market environment, control area size, reserve sharing policy, regulating reserve requirement, and geographical diversity of the wind resource have? What are the interactions with other generating resources? What insights did you gain? What did you learn? What are the variables we can influence? What are the implications for the future?

Wind/Hydro Integration on a Large Hydro System

William Girling, Manitoba Hydro

Wind/Hydro Integration on a Very Large Hydro System

Hannele Holtinnen, Senior Research Scientist, VTT

A Parametric Evaluation of Wind/Hydro Integration in the Avista System in the Pacific Northwest

Clint Kalich, Mgr. of Resource Planning and Power Supply Analyses, Avista Utilities

Discussion of Study Methods and Results

3:00 p.m. – 3:15 p.m.

Break

3:15 p.m. – 5:00 p.m.

More Insights Gained from Operations Studies

IEA Annex 24: International Wind/Hydro Integration Experience

Tom Acker, Associate Professor, Northern Arizona University

Wind Integration Cost Sensitivity to Pumped Hydro Storage

Steve Beuning, Director of Market Operations, Xcel Energy

Idaho Power Wind Integration Study

Rick Haener/Phillip DeVol, Idaho Power

California Renewables Integration Study and the Role of Hydro Plants

Gary Jordan, GE Energy

Discussion of Study Methods and Results

6:00 p.m. – 7:30 p.m.

Reception

Wind-Hydro Integration Workshop

PROGRAM AGENDA

Thursday, March 22, 2007

7:00 a.m. – 8:00 a.m. Continental Breakfast

8:00 a.m. – 10:00 a.m. Opening Session

Technology Status and Developments

Session Chair: Brian Parsons, Project Manager, Wind Applications, NREL

This session will look at three particular areas that are important to the future integration of wind plants into hydro power systems, and explore development needs necessary for the ability to handle ever increasing amounts of wind capacity in the system.

Wind-Hydro Forecasting

Pascal Storck, President, 3TIER

Integrating Forecasting Tools into Control Room Operations

Mark Ahlstrom, CEO, WindLogics

New Hydro Integration Planning Tool Needs

Stuart Bridgeman, Director, Vista Sales and Marketing, Synexus Global

Discussion of Development Needs

10:00 a.m. - 10:15 a.m. Break

10:15 a.m. – 12:00 p.m.

Northwest Transmission and Wind Integration Action Plan Status Report

Session Chair: Elliot Mainzer, Bonneville Power Administration

This session will provide an opportunity to discuss the status of regional transmission planning and the results of the Action Plan, in light of the broad base of experience from around the world, presented and discussed at the workshop.

Outlook for Regional Transmission Planning

Brian Silverstein, Bonneville Power Administration

Northwest Wind Integration Action Plan Status Report

Elliot Mainzer, Bonneville Power Administration

Jon Fischer, PPM Energy

Chris Reese, Puget Sound Energy

- What is the role of wind energy in a power supply portfolio and how does wind energy impact system operations and system flexibility?
- Does the Pacific Northwest have the physical capability to integrate up to 6,000 MW of wind? What are the estimated costs of integrating this amount of wind energy?
- What are the short-term and longer-term transmission requirements for developing 6,000 MW of wind?
- How will the costs of wind integration be recovered?

- How can we work together to help the region meet its wind energy potential at the lowest overall cost?

Action Plan Discussion

12:00 p.m. – 1:00 p.m.

Buffet Lunch

1:00 p.m. – 2:15 p.m.

Opportunities for Improved Regional Cooperation

Session Chair: Ken Dragoon, RNP

This session will explore possibilities for improved levels of regional cooperation through the benefits of deeper and more liquid regional markets, sharing the geographical diversity of wind plants, sharing of ACE and reserve and regulation capacity, and improved access to transmission capacity.

Possibilities for Sharing ACE, Reserve and Regulating Capacity

Carol Opatrny, Opatrny Consulting, Inc.

Flexible–Firm and Redispatch, What’s it All About?

Flexible-firm–Terrin Pearson, Acting Manager, Transmission Policy, Strategy & Rates, BPA
Redispatch–Marcus Wood, Stoel Rives LLP

Overcoming the Structural Barriers to More Liquid Markets for Flexibility Products in the Pacific Northwest

Robert Kahn, Executive Director, Northwest & Intermountain Power Producers Coalition

2:15 p.m. – 2:30 p.m.

Break

2:30 p.m. – 4:00 p.m.

Where Do We Go From Here?

Session Chair: Elliot Mainzer, Bonneville Power Administration

This session will examine a regional approach to wind integration from the Midwest, and review and summarize lessons learned in wind/hydro integration from around the world. The session will conclude with a discussion of their application to the next phase of wind/hydro integration studies to be undertaken in the NW.

MISO Control Area Consolidation Cost/Benefit Study Results and the Impact on the Minnesota 25% Wind Energy Penetration Study

Steve Beuning, Director of Market Operations, Xcel Energy

Lessons Learned: Accommodating Increased Amounts of Wind Energy

Michael Milligan, Consultant, National Renewable Energy Laboratory

- Virtual control area consolidation
- Where does hydro belong in the stack
- Geographic diversity and wind variability
- Regional transmission planning process
- Features for new wind plants
- Features for new thermal plants

Open Discussion: Incorporating What Has Been Learned into the Next Regional Wind Integration Study

4:00 p.m.

Adjourn