

Welcome to
Global WINDPOWER 2004
Conference and Exhibition

the **future** of
wind energy:
achieving the vision

An **international** perspective on the
vision, goals and **challenges**
facing the wind energy industry



co-sponsored by US Department of Energy



Global **WINDPOWER** 2004
Conference and Exhibition

March 28-31, 2004
McCormick Place Convention Center,
Chicago, Illinois, USA



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WE HELP YOU MAKE SURE IT'S REALIZED.**

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On behalf of everyone responsible for Global WINDPOWER 2004 Conference and Exhibition, welcome to Chicago! This is the second in what we are expecting will be a long history of Global Conferences held every two years. This year's conference theme focuses on the vision we all have for wind energy and the actions required to make this vision a reality. The daily sessions are organized into three tracks – Policy, Business and Technical. A series of topical panel discussions are expected to be less formal opportunities for panelists and

conference attendees to discuss issues important to achieving wind energy's long-term potential. Tuesday and Wednesday begin with plenary sessions that will address visions, challenges and implementation strategies for the industry.

As the North American Co-Chair for the conference, I would like to acknowledge the other regional co-chairs who have all contributed to making this a truly global event with speakers from more than 20 countries: Arthouros Zervos – Europe; Sarvesh Kumar – India; Everaldo Feitosa – South America; and Ian Lloyd-Besson – Australia.

The overall program structure was developed by the co-chairs and the steering committee; however the final program would not have been possible without the assistance of the program committee, which includes session co-chairs from around the world and more than 100 committee members who reviewed the hundreds of submitted abstracts to create the detailed final program. The assistance of these individuals, listed in the acknowledgements in the conference program, was important to the success of the conference and was very much appreciated.

Of course, none of this would be possible without the assistance of the staffs of the national wind energy associations, in particular the American and European Wind Energy Associations, who have put countless hours into making this conference an exciting, informative and enjoyable event.

We all hope you have an enjoyable and productive visit to Chicago. Thank you for coming.

Have a great conference!

Robert Z. Poore
North American Co-Chair
Global WINDPOWER 2004
Conference and Exhibition



PHOTO CREDITS:

FPL Energy; GE Energy; Dr. Pinho/Brazil.



SCHEDULE OF CONFERENCE EVENTS

SATURDAY, MARCH 27

- 9:00 am – 5:00 pm **AWEA Board of Directors Meeting** Room CC24
Hyatt Regency McCormick Place Conference Center
- 10:00 am – 4:00 pm **Registration** Exhibit Hall C Lobby
McCormick Place Convention Center

SUNDAY, MARCH 28

- 7:00 am – 10:30 am **Registration for Pre-Conference Seminars**
Regency Ballroom
Hyatt Regency McCormick Place
- 9:00 am – 4:00 pm **Pre-Conference Seminars** Regency Ballroom
Hyatt Regency McCormick Place
- 10:00 am – 9:00 pm **Registration** Exhibit Hall C Lobby
McCormick Place Convention Center
- 6:00 pm – 7:00 pm **Poster Reception** Exhibit Hall C Lobby
McCormick Place Convention Center
- 7:00 pm – 9:00 pm **Opening Reception** Exhibit Hall C
McCormick Place Convention Center

MONDAY, MARCH 29

- 7:00 am – 10:00 am **Registration** S100 Ballroom
McCormick Place Convention Center
- 7:30 am **Speaker Breakfast** Room N226
McCormick Place Convention Center
- 8:00 am – 10:00 am **Welcome and Opening Session** S100 Ballroom
McCormick Place Convention Center
- 9:00 am – 6:00 pm **Registration** Exhibit Hall C Lobby
McCormick Place Convention Center
- 10:00 am – 6:00 pm **Exhibition is Open** Exhibit Hall C
McCormick Place Convention Center
- 10:30 am – 12:00 pm **Session Tracks** N200 level rooms
McCormick Place Convention Center
- 12:00 pm – 1:30 pm **Lunch** Exhibit Hall C
McCormick Place Convention Center
- 1:30 pm – 2:30 pm **Grid Code Committee Meeting** Room N136
McCormick Place Convention Center
- 1:45 pm – 5:00 pm **Session Tracks** N200 level rooms
McCormick Place Convention Center
- 3:00 pm – 5:00 pm **WINDPOWER 2005 Exhibit Sales**
Exhibit Hall C Lobby
McCormick Place Convention Center
- 4:00 pm – 5:00 pm **AWEA Members Meeting** N136
McCormick Place Convention Center
- 5:00 pm – 7:00 pm **Wind on the Wires Board Meeting** Room N134
McCormick Place Convention Center
- Evening **Opening Evening/Company Hospitality Events**

TUESDAY, MARCH 30

- 7:00 am – 10:00 am **Registration** S100 Ballroom
McCormick Place Convention Center
- 7:30 am **Speaker Breakfast** Room N226
McCormick Place Convention Center
- 8:30 am – 10:00 am **Plenary Session – Visions for the Wind Industry: Near- and Long-Term Potential** S100 Ballroom
McCormick Place Convention Center

- 9:00 am – 6:00 pm **Registration** Exhibit Hall C Lobby
McCormick Place Convention Center
- 10:00 am – 6:00 pm **Exhibition is Open** Exhibit Hall C
McCormick Place Convention Center
- 10:30 am – 12:00 pm **Session Tracks** S100 and N200 level rooms
McCormick Place Convention Center
- 12:00 pm – 1:30 pm **Lunch** Exhibit Hall C
McCormick Place Convention Center
- 12:00 pm – 2:00 pm **US Technical Advisory Group** Room N132
McCormick Place Convention Center
- 1:45 pm – 5:00 pm **Session Tracks** S100 and N200 level rooms
McCormick Place Convention Center
- 3:00 pm – 5:00 pm **WINDPOWER 2005 Exhibit Sales**
Exhibit Hall C Lobby
McCormick Place Convention Center
- 4:30 pm – 6:30 pm **AWEA Safety Sub-Committee Meeting**
Room N132
McCormick Place Convention Center
- 6:30 pm – 9:30 pm **Awards Banquet** Regency Ballroom
Hyatt Regency McCormick Place

WEDNESDAY, MARCH 31

- 7:00 am – 10:00 am **Registration** S100 Ballroom
McCormick Place Convention Center
- 7:30 am **Speaker Breakfast** Room N226
McCormick Place Convention Center
- 8:30 am – 10:00 am **Plenary Session – Defining the Challenges and Implementing the Vision** S100 Ballroom
McCormick Place Convention Center
- 9:00 am – 2:00 pm **Registration** Exhibit Hall C Lobby
McCormick Place Convention Center
- 10:00 am – 2:00 pm **Exhibition is Open** Exhibit Hall C
McCormick Place Convention Center
- 10:30 am – 12:00 pm **Session Tracks** N200 level rooms
McCormick Place Convention Center
- 11:00 am – 3:00 pm **WINDPOWER 2005 Exhibit Sales**
Exhibit Hall C Lobby
McCormick Place Convention Center
- 12:00 pm – 1:30 pm **Lunch** Exhibit Hall C
McCormick Place Convention Center
- 12:30 pm – 3:30 pm **Wind Opportunities for Co-ops** Room N132
McCormick Place Convention Center
- 1:45 pm – 5:00 pm **Session Tracks** N200 level rooms
McCormick Place Convention Center

THURSDAY, APRIL 1

- 9:00 am – 3:30 pm **Mendota Hills Project Tour**
Departing from the North Building, Level 1
Transportation Lobby
McCormick Place Convention Center
- 9:30 am – 12:30 pm **Equipment Facility Tour and Software Demonstrations**
Departing from the North Building, Level 1
Transportation Lobby
McCormick Place Convention Center



Pre-Conference Seminars

Sunday, March 28, 9:00 am – 4:00 pm

Regency Ballroom, Hyatt Regency McCormick Place

Fundamentals of Wind Energy: This non-technical workshop will provide a comprehensive introduction to the fundamentals of utility-scale wind energy. Anyone wanting to learn the basics of the wind energy industry will benefit from this day-long introductory workshop.

Speakers: **Bruce Bailey**, President, AWS Scientific, Inc.

Kathy Belyeu, Strategic Communications, American Wind Energy Association

David Blittersdorf, President/CEO, NRG Systems, Inc.

Jim Caldwell, Policy Director, American Wind Energy Association

Bob Gates, Senior Vice President, GE Energy

Robert Poore, President, Global Energy Concepts, LLC

Randall Swisher, Executive Director, American Wind Energy Association

Taking Small Wind to the Next Level: Reaching Industry Goals: Small wind turbines, up to 100kW, are being installed at homes, farms, small businesses and public facilities in ever increasing numbers. This full-day seminar will provide an overview of small wind turbine products and the numerous issues related to implementing small wind turbine projects.

Speakers: **Mike Bergey**, President, Bergey Windpower Company

David Blittersdorf, President/CEO, NRG Systems, Inc.

Trudy Forsyth, Small Wind Turbine Project Leader, National Renewable Energy Laboratory

Jim Green, Senior Engineer, National Renewable Energy Laboratory

Robert Preus, Owner, Abundant Renewable Energy

Heather Rhoads-Weaver, Small Wind Advocate, American Wind Energy Association

Kenneth Starcher, Director, Alternative Energy Institute

Transmission: Getting an Interconnection: This workshop will review the process of interconnecting a wind project to the transmission grid. This process entails negotiations with the transmission-owning utility and, in some regions, a regional transmission organization or independent system operator.

Speakers: **Scott Hempling**, Attorney at Law, Law Offices of Scott Hempling, P.C.

Whitfield A. Russell, Whitfield Russell Associates

Poster Reception

Sunday, March 28, 6:00 pm – 7:00 pm

Exhibit Hall C Lobby, McCormick Place Convention Center

This year there will be more than 130 poster presentations arranged in the lobby of the Exhibit Hall. Come join us on Sunday, March 28, from 6:00 pm to 7:00 pm to take a look at all the visual presentations and meet the poster authors. Refreshments and light snacks will be served.

Opening Reception

Sunday, March 28, 7:00 pm – 9:00 pm

Exhibit Hall C, McCormick Place Convention Center

Directly following the Poster Reception will be the Opening Reception from 7:00 pm to 9:00 pm which will take place in the Exhibit Hall providing a 'sneak peek' at all of the exciting displays from more than 220 exhibiting companies. Enjoy music, food and drinks while

catching up with your old colleagues and friends as well as meeting new ones!

Awards Banquet

Tuesday, March 30, 6:30 pm

Regency Ballroom, Hyatt Regency McCormick Place

Each year, the American Wind Energy Association (AWEA) recognizes a group of companies or individuals that are top contributors to the wind energy industry. Join us as we acknowledge these industry leaders.

Mendota Hills Project Tour

Thursday, April 1, 9:00 am – 3:30 pm

Departing from the North Building, Level 1 Transportation Lobby, McCormick Place Convention Center

Gamesa Energía is sponsoring a tour of the Mendota Hills Wind Farm, the first utility-scale wind farm built in the State of Illinois. The project is located between the cities of Rochelle and Mendota in Lee County, approximately 80 miles west of Chicago. The wind farm features 63 **Gamesa Eólica** G52-800kW turbines arrayed on 2,600 acres of farmland. The project, developed by **Navitas Energy**, will deliver approximately 130,000MWh of electricity annually to the **Commonwealth Edison** utility system. The tour will depart the McCormick Place Convention Center at 9:00 am on Thursday, April 1, with an approximate arrival time back to the convention center around 3:30 pm. Lunch will be provided at the project site.

Equipment Facility Tour and Software Demonstrations

Thursday, April 1, 9:30 am – 12:30 pm

Departing from the North Building, Level 1 Transportation Lobby, McCormick Place Convention Center

This two-part technical tour includes:

Real-Time Weather and Power Grid Management: What happens to wind power production when a weather front moves through the area? What effect does this have on the power grid and utility control room applications? How should systems operators respond? What must be done to add more wind energy to the power grid while maintaining reliability and delivering power at competitive prices? Using state-of-the-art technology, **WindLogics™** and **AREVA T&D** will demonstrate solutions to these real-life issues faced by wind farm and grid operators. WindLogics will show a dramatic day of real weather moving through the Illinois area. Zooming to a wind farm location, you will see how that weather impacts the turbines and the power production. At the same time, AREVA T&D's **e-terra simulator™**, a Dispatcher Training Simulator, will show the impact on real-time power system operation through energy management system applications used in a utility control center environment.

Manufacturing Facility Tour: S&C Electric Co. is a global provider of switching and protection equipment, and services for electric power systems. S&C is an AWEA member that has supplied many switchgear and protection products, including transmission voltage transformer protection equipment, to several operating wind farms. S&C also provides voltage compensation systems of both inverter and thyristor switched capacitor-based designs. Come tour the S&C Electric Co.'s Chicago manufacturing facility, including some key manufacturing areas of S&C's traditional protection equipment and a demonstration of its inverter-based voltage compensation system.



Global WINDPOWER 2004 Co-Sponsoring Wind Organizations

AWEA would like to thank the following co-sponsoring wind organizations for their contributions and support in making **Global WINDPOWER 2004 Conference and Exhibition** a tremendous success:

ADEME (France)
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Australian Wind Energy Association
Austrian Wind Energy Association
Brazilian Wind Energy Association
British Wind Energy Association
Bulgarian Wind Energy Association
Bundesverband Windenergie (Germany)
Canadian Wind Energy Association
Chinese Renewable Energy Association
Czech Society for Wind Energy
Danish Turbine Owners Association
Danish Wind Industry Association
Estonian Wind Power Association
European Wind Energy Association
Faroe Islands Wind Energy Association
Finnish Wind Power Association
Finnish Wind Energy Association
FME – Groep Windenergie (Netherlands)
FOI – Aeronautics FFA (Sweden)
Fordergesellschaft Windenergie e.V. (Germany)
France Energie Eolienne
Hellenic Association of Wind Energy Investors
Hellenic Wind Energy Association
Hrvoje Pozar Energy Institute (Croatia)
Hungarian Wind Energy Association
Hungarian Wind Energy Scientific Association
Indian Wind Energy Association
Indian Wind Turbine Manufacturers Association

INEGI (Portugal)
International Association of Wind Engineering
Irish Wind Energy Association
IRO Offshore Wind Energy Group (Netherlands)
ISES Italia (Italy)
Japan Wind Energy Association
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Korean Wind Energy Research Group
Latvian Wind Energy Association
National Technical University Athens
Netherlands Wind Energy Association
New Zealand Wind Energy Association
Nigerian Wind Energy Association
Norwegian University of Science and Technology
Plataforma Empresarial Eolica (Spain)
Polski Rejestr Statkow SA (Poland)
Romanian Wind Energy Association
Russian Association WindPower Industry
SER (France)
South African Wind Energy Association
State of Israel
Suisse-Eole (Switzerland)
Swedish Wind Energy Technology Group
Turkish Wind Energy Association
Ukranian Wind Energy Association
VDMA (Germany)
VIS (Sweden)
VIS Venti Association for Supporting Wind Energy (Poland)
Wirtschaftsverband Windkraftwerke e.V. (Germany)

Global WINDPOWER 2004 Awards

Commercial Achievement

AWS Scientific/TrueWind Solutions

Commercial Achievement

FPL Energy

Financier of the Year

Babcock and Brown

State Leadership Award

New Jersey Board of Public Utilities

Technical Achievement

Second Wind

Federal Leadership Award

Peter Goldman, DOE Wind

Outstanding Achievement in Operations

Russell Leach, GE Energy

Academic Achievement

Stel Walker, Oregon State University

Special Achievement Award

Ryan Wiser, Lawrence Berkeley Laboratory

Utility Leadership Award

PacifiCorp

Outstanding Contribution to the Wind Industry

Stephen Reuwer, FPL Energy

Special Achievement Award

Mary McCann, GE Energy

Wind Energy Advocacy Award

Environmental Law and Policy Center

PROGRAM SCHEDULE AT A GLANCE



Sunday, March 28					
Pre-Conference Seminars (All Global WINDPOWER 2004 Pre-Conference Seminars will be held from 9:00 am to 4:00 pm in the Regency Ballroom, Hyatt Regency McCormick Place)					
9:00 am – 4:00 pm	Fundamentals of Wind Energy	Taking Small Wind to the Next Level: Reaching Industry Goals	Transmission: Getting an Interconnection		
Poster and Opening Receptions (The Poster Reception and Opening Reception will take place in the McCormick Place Convention Center)					
6:00 pm – 7:00 pm	Poster Reception (Exhibit Hall C Lobby)				
7:00 pm – 9:00 pm	Opening Reception (Exhibit Hall C)				
Monday, March 29					
8:00 am – 10:00 am	Global WINDPOWER 2004 Welcome and Opening Session (S100 Ballroom)				
	Policy Track (Room N230)	Technical Track (Room N227b)	Business Track (Room N228)	Panel Discussions (Room N229)	Legislative Update (S100 Ballroom)
10:30 am – 12:00 pm	National Programs	Improvements in Blade and Low Wind Speed Technology	Financing in Developing Countries and Emerging Markets	Forecasting Challenges and Solutions	AWEA Legislative Update
12:00 pm – 1:30 pm	Lunch (Exhibit Hall C)				
1:45 pm – 3:15 pm	Developing Country/Emerging Markets Focus	Improvements in Drive Train Related Technology and Structures	Project Finance: Technical and Legal Issues	Wind Energy Media Coverage: Challenges and Opportunities	
3:30 pm – 5:00 pm	Grid Access and Transmission	Operations and Maintenance	Wind Energy Finance: Project Structures and Strategies	Emerging Issues in Developing Countries and Markets	
Tuesday, March 30					
8:30 am – 10:00 am	Plenary Session – Visions for the Wind Industry: Near- and Long-Term Potential (S100 Ballroom)				
	Policy Track (Room N230)	Technical Track (Room N227b)	Business Track (S100 Ballroom)	Panel Discussions (Room N229)	Small Wind Track (Room N228)
10:30 am – 12:00 pm	State and Regional Programs	Grid Interconnection and Wind Generator Electrical Modeling	Wind Turbine Manufacturers' Executive Forum	Research and Development: What is Needed	Wind Energy for Farms, Homes and Small Businesses
12:00 pm – 1:30 pm	Lunch (Exhibit Hall C)				
1:45 pm – 3:15 pm	US Government Agencies' Programs	Grid Operating Impacts and Analysis	Large Wind Turbine Vendor Forum	Technical Discussions	Hybrid System Technology Needs
3:30 pm – 5:00 pm	Definition and Control of Green Attributes	Wind Turbine Loading: Conditions, Predictions and Measurements	Component Vendor Forum	Transmission and Utilities: Challenges of Making it Work	Advanced Small Turbine Technology
Wednesday, March 31					
8:30 am – 10:00 am	Plenary Session – Defining the Challenges and Implementing the Vision (S100 Ballroom)				
	Policy Track (Room N230)	Technical Track (Room N227b)	Business Track (Room N228)	Panel Discussions (Room N229)	
10:30 am – 12:00 pm	Experience with Market Support Mechanisms	Forecasting Challenges and Solutions	Wind Energy Finance: Capital Markets and Future Trends	Large-Scale Wind Energy Development in Developing Countries: Barriers and Solutions, Tools and Case Studies	
12:00 pm – 1:30 pm	Lunch (Exhibit Hall C)				
1:45 pm – 3:15 pm	Offshore Policy and Experience	Resource Assessment and Micrositing Strategies and Experience	Development Challenges and Solutions	Finance: Lowering the Cost of Capital	
3:30 pm – 5:00 pm	Focus on the Midwest of the USA	Future Applications (Hydrogen, Storage, Desalination, etc.)	Siting, Permitting and NIMBY Issues	Offshore: Opportunities and Challenges	



Monday, March 29 8:00 am – 10:00 am

Global WINDPOWER 2004 Welcome Session (S100 Ballroom)

Moderator: John Johansen, President, Sunfire, LLC /President, American Wind Energy Association

Richard M. Daley, Mayor of the City of Chicago, USA (invited)
Randall Swisher, Executive Director, American Wind Energy Association

Opening Session (S100 Ballroom)

Moderator: Randall Swisher, Executive Director, American Wind Energy Association

Stephen Timms MP, Minister of Energy, UK
Kyle McClarrow, Deputy Secretary, US Department of Energy, USA
Rainer Hinrichs-Rahlwes, Director-General, German Environment Ministry, Germany
Dilma Rousseff, Minister of Mines and Energy, Brazil (invited)
Representative from Ministry of State for Non-Conventional Energy Sources, India

Monday, March 29 10:30 am – 12:00 pm

National Programs (Room N230)

Moderators: Wojciech Glocko, Deputy Manager, EPA Spolka Z O.O., Poland
William Vachon, President, W.A. Vachon & Associates, Inc., USA

Arthouros Zervos, President, European Wind Energy Association, Belgium
Development of Wind Power in Europe

Lawrence Staudt, Manager, Centre for Renewable Energy at Dundalk Institute of Technology, Ireland

Wind Energy Development in Ireland

André Antolini, President, Syndicat des Energies Renouvelables/Vice President, European Wind Energy Association, France

Forecast for French Market and Framework

Larry Flowers, Team Leader, National Renewable Energy Laboratory, USA

Wind Powering America: An Update

Robert Hornung, President, Canadian Wind Energy Association, Canada
Canadian Wind Energy Policy: Challenges and Opportunities for the Wind Energy Industry

Improvements in Blade and Low Wind Speed Technology (Room N227b)

Moderators: Hikaru Matsumiya, Senior Researcher, National Institute of Advanced Industrial Science and Technology, Japan
Mark Young, Project Engineer, Global Energy Concepts, LLC, USA

Herbert Sutherland, DMTS, Sandia National Laboratories, USA
Updated Goodman Diagram for Fiberglass Composite Materials Using the DoE/MSU Fatigue Database

Tom Ashwill, PMTS, Sandia National Laboratories, USA

Design and Manufacturing Developments for Lower Cost, Large Wind Turbine Blades

Dayton Griffin, Engineering Project Manager, Global Energy Concepts, LLC, USA

Cost/Performance Tradeoffs for Carbon Fibers in Wind Turbine Blades

Joseph Cohen, Vice President – Alternative Energy Practice, Princeton Energy Resources International, LLC, USA

Assessment of Potential Improvements in Large-Scale Low Wind Speed Technology

Jesper Månsson, Head of Technical Support, LM Glasfiber, Denmark

Why De-Icing of Wind Turbine Blades?

Financing in Developing Countries and Emerging Markets (Room N228)

Moderator: Dana Younger, Senior Adviser, Renewable Energy and Sustainability, Infrastructure Department, International Finance Corporation, USA

John Stephens, Manager – Global Development, GE Energy, USA

Financing in Emerging Markets: A GE Perspective

Dirk Kooman, Director – International Projects, Nuon Renewable Energy Projects, Netherlands

Financing Wind Farms in Asia: Experience in China and India

Ian Mays, Managing Director, Renewable Energy Systems Group, UK
Developing and Financing Wind Projects in Developing Countries
John Paul Moscarella, Executive Vice President, Econergy International Corporation/Manager, Clean Tech Fund, Mexico
Craig O'Connor, Environmental Liaison, Export-Import Bank of the United States, USA

Forecasting Challenges and Solutions – Panel Discussion (Room N229)

The panel will shed light on the challenges and possible solutions that are faced within the field of short-term prediction. Short-term prediction is still in many ways in its infancy, and with the growing amount of wind energy being connected to the grid, it becomes more and more important. The panel will start by giving a utility view of the challenges, then move on to discussing the various trends within the field.

Moderator: Lars Landberg, Head of Research Programme, Risø National Laboratory, Denmark

Gregory Giebel, Risø National Laboratory, Denmark

Using Prediction Models in Other Applications

George Kariniotakis, Associate Scientific Manager, Ecole des Mines de Paris, France

The Latest in Systems Development

Henrik Madsen, Technical University of Denmark

The Latest in Mathematical Modeling

Charles McGowin, Technical Leader Wind Power, Electric Power Research Institute, USA

A Utility View on the Challenge

John Zack, Principal, TrueWind Solutions, LLC, USA

The Latest in Physical Modeling

AWEA Legislative Update (S100 Ballroom)

This session will provide up-to-the-minute information on US Federal and State legislative policy decisions affecting the market for wind power. Discussion will include the latest on broad-ranging Federal energy policy legislation including an extension of the wind energy Production Tax Credit (PTC) and creation of a new small turbine tax credit. The session will also cover State legislation including creation of additional State Renewables Portfolio Standard (RPS) policies and how these policies work in the real world of project development. In addition, there will be a discussion of renewable energy and clean air policy.

Moderator: R.T. 'Hap' Boyd, GE Energy, USA

Jaime Steve, Legislative Director, American Wind Energy Association, USA

Jon Chase, Deputy Director – Legislative Affairs, American Wind Energy Association, USA

Declan Flanagan, Chief Executive Officer, Airtricity Inc., USA

Alden Hathaway, Director – Green Power Programs, Environmental Resources Trust, Inc., USA

Monday, March 29 1:45 pm – 3:15 pm

Developing Country/Emerging Market Focus (Room N230)

Moderators: Alexander Karsner, Managing Director, Enercorp Ltd., USA
Alan Sides, Manager – Asia, GE Energy, Japan

Everaldo Feitosa, President, Brazilian Wind Energy Center, Brazil

The New Wind Energy Era in Brazil

Gabor Horvath, Director – Research and Development, Eurowind Hungary Ltd., Hungary

Wind Energy in Hungary as a New EU Member State

Edmond Ismaili, Researcher, Mie University, Albania

Wind Energy in Albania: A High Potential Emerging Market

Sarvesh Kumar, Chief Operating Officer, Vestas RRB India Ltd./Chairman, Indian Wind Turbine Manufacturers Association

Pengfei Shi, Senior Consultant, China Hydropower Planning General Institute, China
Large Potential Market of Wind Power in China



Improvements in Drive Train Related Technology and Structures (Room N227b)

Moderators: **Craig Christenson**, Chief Engineer, GE Energy, USA
Christian Nath, Geschäftsführer/Managing Director, Germanischer Lloyd WindEnergie GmbH, Germany

Jan Declercq, Technical Business Development Manager, Pauwels International, Belgium
Transformers for Wind Turbines as Vital Component: Need for New Designs or Business as Usual

Peter Jamieson, Principal Engineer, Garrad Hassan and Partners Ltd., Scotland
Gyroscopic Variable Transmission (GVT) for Wind Energy Systems

Michael Kotzalas, Product Development Specialist, The Timken Company, USA
Comparison of DIN 281.4 Bearing Fatigue Life Predictions with Test Data

Peter Petersen, Deputy Global Market Director, Det Norske Veritas, Denmark
Structural Design of Grouted Connection in Offshore Steel Monopile Foundations

Christopher Walford, Senior Engineer, Global Energy Concepts, LLC, USA
Advanced Wind Turbine Drive Train Prototype Development

Project Finance: Technical and Legal Issues (Room N228)

Moderators: **Howard Susman**, Attorney, Duckor Spradling & Metzger, USA
Edwin Feo, Partner, Milbank, Tweed, Hadley & McCloy LLP, USA

Adam Schwarz, Senior Engineer, Garrad Hassan America, Inc., USA
A Review of the Wind Risks Associated with Financing Wind Farms

Stephen Jones, Director, Global Energy Concepts, LLC, USA
Technical Issues Affecting Project Cash Flows

Annonette Alberti, Project Manager/Senior Regulatory Specialist, Tetra Tech FW, Inc., USA
Critical Issues Analyses: How to Use Upfront Environmental Information to Support Financing and Development of Wind Projects

James Gede, Jr., Partner, Hogan & Hartson LLP, USA
PPA and Interconnection Legal Issues in Financing and Investing in Wind Projects

Michael Weizman, Partner, McCarthy Tétrault LLP, Canada
An Overview of Key Lender and Investor Issues in the Development of Wind Power Projects: A Legal Perspective

Wind Energy Media Coverage: Challenges and Opportunities – Panel Discussion (Room N229)

Wind energy is drawing an increasing amount of media attention and scrutiny in the US while it continues to generate headlines around the world. Media coverage will increase as more projects are proposed and wind becomes a larger part of the energy mix in the US and worldwide. Journalists, editors, members of the media and representatives of the wind energy industry will discuss the challenges and opportunities they face when reporting on, or communicating about, wind energy.

Moderator: **Jan Johnson**, Director – Public Relations, PPM Energy, USA

Chris Holly, Reporter, Energy Daily, USA

Tom Nelthorpe, Editor, Project Finance, USA

Richard Stavros, Executive Editor, Public Utilities Fortnightly, USA

Michael Coleman, Washington Correspondent, Albuquerque Journal, USA

Neal St. Anthony, Columnist, Star Tribune, USA

Monday, March 29 3:30 pm – 5:00 pm

Grid Access and Transmission (Room N230)

Moderators: **Jim Caldwell**, Policy Director, American Wind Energy Association, USA
Thomas Ackermann, Dipl.-Ing., Royal Institute of Technology, Sweden

Mark Goodwin, Technical Sales Manager, NEG Micon, USA
A Global Comparison of Transmission Guidelines/Policies

Scott Hempling, Attorney at Law, Law Offices of Scott Hempling, P.C., USA
Is Federal Transmission Policy Stifling State Renewables Mandates? Sorting Out Siting, Interconnection and Access in a Multijurisdictional Setting

Roger Hamilton, Consultant, National Renewable Energy Laboratory, USA
Wind Scenarios in the Rocky Mountain Area Transmission Study

Matt Schuerger, Energy Consultant, Wind on the Wires and Union of Concerned Scientists, USA
Net Environmental Impacts of Transmission Systems in the Midwest

Operations and Maintenance (Room N227b)

Moderators: **Mike Kelly**, Director – Operations Services, Zilkha Renewable Energy, USA
Brent Reardon, Technical Manager – Wind, FPL Energy, Inc., USA

Enrique Pedrosa, Marketing Director, Gamesa Eólica, Spain
Predictive Maintenance System

Justin Stover, Sales Engineer, C.C. Jensen, Inc., USA

Wind Turbine Gearbox Reliability and Wear Rates: The Influence of Clean Oil and How to Develop Best Practices When Implementing AGMA/AWEA 6006

Gordon Randall, Technical Analyst, Global Energy Concepts, LLC, USA

Experiences with Nacelle-Anemometer-Based Power Performance Tests

Erik Sloth, NEG Micon, Denmark
Problems Related to the Use of the Existing Noise Measurement Standards When Predicting Noise from Wind Turbines and Farms

Diane Broad, Electrical Engineer, ESA, Inc., USA

Electrical System Modeling to Improve Wind Farm Performance: Park Design and Power Quality Issues

Wind Energy Finance: Project Structures and Strategies (Room N228)

Moderators: **Steve Jones**, Director, Global Energy Concepts, LLC, USA
James Tynion, III, Partner, Foley & Lardner, USA

Thomas Wind, Owner, Wind Utility Consulting, USA

Developing and Financing Farmer and Community-Owned Wind Generation

Jeffrey Chester, Partner, Kaye Scholer LLP, USA

Financing Strategies for Developers Who Do Not Have an Investment Grade Credit Rating

James Duffy, Partner, Nixon Peabody LLP, USA
Syndicating Production Tax Credits: Financing and Tax Structuring to Maximum Equity Investment in Exchange for Production Tax Credits

Klaus Rave, Investitionsbank, Germany

New Elements of Project Finance: New Strategies and New Markets

Michael Midden, Vice President, Dexia Crédit Local, New York Agency, USA

Wind Project Expansions: Risks and Issues from a Lender's Perspective

Emerging Issues in Developing Countries and Markets – Panel Discussion (Room N229)

This panel provides a timely opportunity to discuss the most important private and public actions to accelerate wind energy development in developing countries. Panelists will review the key issues in developing wind power in developing countries, building on the discussion in the preceding sessions on financial and policy issues. The speakers will address the challenges and opportunities specific to Africa, Asia and South America based on recent studies and experience, as the basis for a discussion of the most important next steps to promote a vibrant wind industry in developing countries.

Moderator: **Alan Miller**, GEF Coordinator, International Finance Corporation, USA

Ilan Dunsky, Partner, McCarthy Tétrault LLP, Canada

Wind Power Issues in Emerging Markets

Alexander Karsner, Managing Director, Enercorp Ltd., USA

Developing IPP Wind Projects

Richard Legault, President, Helimax Energy, Canada

Results of the Strategic Study on Wind Energy Deployment in Africa

John Paul Moscarella, Executive Vice President, Econergy International

Corporation/Manager, Clean Tech Fund, Mexico

Issues and Opportunities for Wind Energy: Perspectives from Mexico

Shi Pengfei, Senior Consultant, China Hydropower Planning General Institute, China

Tuesday, March 30 8:30 am – 10:00 am

Plenary Session – Visions for the Wind Industry: Near- and Long-Term Potential (S100 Ballroom)

Moderator: **John Johansen**, President, Sunfire, LLC/President, American Wind Energy Association

Rakesh Bakshi, RRB Consultants & Engineers Pvt Ltd., India

Christopher Flavin, President, Worldwatch Institute, USA

Bob Klein, Energy Risk Director, ScottishPower, USA

Corin Millais, Chief Executive Officer, European Wind Energy Association, Belgium

Mike O'Sullivan, Vice President of Development, FPL Energy, USA

Steven Zwolinsky, President and Chief Executive Officer, GE Energy – Wind Segment, USA



Tuesday, March 30 10:30 am – 12:00 pm

State and Regional Programs (Room N230)

Moderators: **Fernando Ferreras**, Vice President, EHN North America Corp., USA
Mark Lambert, Board Member, Iowa Utilities Board, USA

Barry Jones, Executive General Manager, Invest Australia, Australia
Australia's Commitment to Renewable Energy and the Importance of Wind
Jonathan Johns, Partner, Renewable Energy Group, Ernst & Young LLP, UK
Comparing the Attractiveness of Different Countries for Renewable Energy Investment
Cassandra Kling, Renewable Energy Program Manager, New Jersey Board of Public Utilities, USA

Incentives and Policies in New Jersey

Valerie Strauss, Senior Policy Analyst, Young Sommer, LLC/American Wind Energy Association, USA

The Development of New York State's Renewables Portfolio Standard and the Potential for a Regional Market for Renewable Energy in the Northeastern United States

Peter West, Renewable Energy Program Manager, Energy Trust of Oregon, USA
Oregon Activities Supporting Wind

Grid Interconnection and Wind Generator Electrical Modeling (Room N227b)

Moderators: **J. Charles Smith**, Director, Nexgen Energy LLC, USA
John Olav Tande, SINTEF Energy Research, USA

Jan Kristiansen, Manager of Power System Engineering, NEG Micon Control Systems, Denmark

Meeting Global Grid Integration Requirements

Robert Zavadil, Vice President and Principal Consultant, EnerNex Corporation, USA
Power System Engineering Issues for Large-Scale Wind Generation Facilities in the US: Status and Needs

Craig Quist, Principal Engineer, PacifiCorp, USA
Bridging the Technical Gap between Wind Farms and the Transmission System: PacifiCorp's Experience in Integrating the Uinta County Wind Farm with the Wyoming Transmission System

Thomas Ackermann, Dipl.-Ing., Royal Institute of Technology, Sweden
Transmission Systems for Offshore Wind Farms: An Overview

Wind Turbine Manufacturers' Executive Forum (S100 Ballroom)

Moderators: **Karen Conover**, Chief Executive Officer, Global Energy Concepts, LLC, USA
Arthouros Zervos, President, European Wind Energy Association, Belgium

Torben Bjerre-Madsen, Chief Executive Officer, NEG Micon A/S

Iñaki López Gandasegui, Chief Executive Officer, Gamesa Corporación Tecnológica, S.A.

Shunji Nakamura, Vice President, Mitsubishi Power Systems, Inc.

Svend Sigaard, President and Chief Executive Officer, Vestas Wind Systems A/S

Toine van Megen, Vice President – International Business Development, Suzlon Wind Energy Corp.

Steven Zwolinski, Chief Executive Officer, GE Energy-Wind Segment

Research and Development: What is Needed – Panel Discussion (Room N229)

Engineers at research institutions and WTG company R&D engineers will discuss research needs from their points of view. The research community has a sense of long-term possibilities and issues and the company engineers know their short-term needs, commercial pressures and where the commercial comfort zone is. We hope for an engaging exchange between the panelists and invite audience participation.

Moderators: **Pep Prats**, Vice President – Engineering, Ecotecnia s.c.l., Spain
Robert Thresher, Director – Wind Section, National Renewable Energy Laboratory, USA

Andrew Garrad, Garrad Hassan Partners, UK

Peter Hjulær Jensen, Head of Programme, Risø National Laboratory, Denmark

G.A.M. van Kuik, Senior Researcher, TU Delft, Netherlands

James P. Lyons, Senior Engineer, GE Global Research Center, USA

Wind Energy for Farms, Homes and Small Businesses (Room N228)

Moderators: **Peter Dreyfuss**, Director, Chicago Regional Office, US Department of Energy
Michael Bergey, President, Bergey Windpower Company

Ryan Hayes Wiser, Scientist, Lawrence Berkeley National Laboratory, USA
Building a Market for Small Wind Systems: Calculating the Break-Even Turnkey Cost of Residential Wind Systems in the United States

Charlie Dou, General Manager, Beijing Bergey Windpower Co., Ltd., China
Experience and Lessons Learned from Renewable Energy System Application in China Rural Electrification

Michael Klemen, USA

Experiences in Testing Numerous Small Wind Turbines and Comments on Turbine Design

Heather Rhoads-Weaver, Director – Community Partnerships, NW Sustainable Energy for Economic Development, USA

Our Wind Co-op: Exploring Joint Green Tag Financing and Marketing Models for Energy Independence
William Hagy, Deputy Administrator for Business Programs, US Department of Agriculture, USA

Farm Bill Section 9006 Program: Proven Funding Source for Rural Wind Energy Systems

Mark Bolinger, Principal Research Associate, Lawrence Berkeley National Laboratory, USA
Community-Owned Wind Power Development: The Challenge of Applying the European Model in the United States, and How States are Addressing that Challenge

Tuesday, March 30 1:45 pm – 3:15 pm

US Government Agencies' Programs (Room N230)

Moderators: **Stan Calvert**, Wind Energy Team Leader, US Department of Energy, USA
Kevin Smith, Project Manager, Global Energy Concepts, LLC, USA

Stan Calvert, Wind Energy Team Leader, US Department of Energy, USA

US Department of Energy Wind Energy Research and Development: A Current Overview of a Continually Evolving Program

William Hagy, Deputy Administrator for Business Programs, US Department of Agriculture, USA

A Source of Funding for Rural Wind Energy Systems

Lee Otteni, Bureau of Land Management – New Mexico, USA

BLM Wind Energy EIS

Kurt Johnson, Director – Green Power Partnership, US Environmental Protection Agency, USA
Overview of the Green Power Partnership

Alvin L. Day, Chief – Mechanical/Electrical Engineering Division, Air Force Civil Engineering Support Agency, USA

Mike Santoro, Air Force Civil Engineering Support Agency, USA

Mike Warwick, Sr. Engineer, Pacific Northwest National Laboratory, USA

Grid Operating Impacts and Analysis (Room N227b)

Moderators: **Martin Hoppe-Kilpper**, Head of R&D Division Information and Energy Economy, Institut für Solare Energieversorgungstechnik, Germany
Brian Parsons, Project Manager – Wind Applications, National Renewable Energy Laboratory, USA

George Kariniotakis, Associate Scientific Manager, Ecole des Mines de Paris, France
Quantification of Capacity Credit and Reserve Demand from the Large-Scale Integration of Wind Energy in the French Power System

J. Charles Smith, Director, Nexgen Energy LLC, USA

Wind Power Impacts on Electric-Power-System Operating Costs: Summary of Current Understanding, March 2004

Poul Østergaard, Associate Professor, Aalborg University, Denmark

Wind Power, Distributed Generation and Transmission Losses: Integration of 50+ Percent Wind Power?

Lawrence Jones, Sr. Product Marketing Manager, AREVA T&D Corporation, USA

Analyzing Operational Impacts of Large Wind Plants in Power Systems

Michael Milligan, Consultant, National Renewable Energy Laboratory, USA

California RPS Integration Study: Phase I Summary and Results



Large Wind Turbine Vendor Forum (S100 Ballroom)

Moderator: **Dayton Griffin**, Engineering Project Manager, Global Energy Concepts, LLC, USA

Leif Andersen, Sales Director, NEG Micon USA, Inc., USA
Tom Carbone, Vice President – Sales and Marketing, Vestas-Americas, Inc., USA
Jan Kjaersgaard, Sales Director, BONUS Energy A/S, Denmark
Ward Marshall, Sales Manager – Texas and Southern Plains, GE Energy, USA
Enrique Pedrosa, Marketing Director, Gamesa Eólica, Spain
Masaaki Shibata, Mechanical Engineer, Mitsubishi Power Systems, Inc., Japan
Toine van Megen, Vice President – International Business Development, Suzlon Wind Energy Corp., USA

Technical Discussions – Panel Discussion (Room N229)

The panel will concentrate on two: namely transmission arrangements and blade designs for large wind turbines. In the first part the panelists will present their views on gearbox design and bearing analysis, while in part two there will be short presentations about rotor blade designs for large wind turbines. In each of the two sessions the presentations of the panelists are intended to initiate a lively discussion and exchange of the views of both the audience and the panelists.

Moderators: **Christian Nath**, Germanischer Lloyd WindEnergie GmbH, Germany
Flemming Rasmussen, Head of Programme, Risø National Laboratory, Denmark

Jens Demtröder, Dipl.-Ing., NEG Micon A/S, Denmark
Daniel Doncaster, Application Specialist, SKF UK Ltd., UK
Peter Flamang, VP-R&D, Hansen Transmissions International, Belgium
Martin Lehnhoff, Dipl.-Ing., Aerodyu Energiesysteme, Germany
Frank Nielsen, LM Glasfiber A/S, Denmark
 Vestas (invited)

Hybrid System Technology Needs (Room N228)

Moderators: **Trudy Forsyth**, Small Wind Turbine Project Leader, National Renewable Energy Laboratory, USA
Elvis Zekeri, President, Nigerian Wind Energy Association, Nigeria

Henry duPont, Managing Director, Lorax Energy Systems, LLC, USA
Wind-Diesel Hybrid Power System Provides Critical Power to Help Clean Up Remote Superfund Site
Mia Devine, Graduate Research Assistant, University of Massachusetts, USA
Wind-Diesel Hybrid Options for Remote Power Stations in Alaska
Christopher Henderson, Research Assistant, University of Massachusetts, USA
Feasibility Study for a Wind-Diesel Hybrid System with Desalination for Star Island, NH
Jon McGowan, Professor, University of Massachusetts, USA
A Hybrid Wind-Diesel System for the US Navy at Guantanamo Naval Base: Using an Energy Savings Performance Contract
João Pinho, Full Professor, Federal University of Pará, Brazil
Operational Strategies of Wind-Diesel Systems for Electricity Generation Using Intelligent Systems
Laurent Mondou, P.Eng., DERMOND Inc., Canada
Complete 'GREEN ENERGY' Electricity Management System for Artic Diesel Driven Grids and Rooftop Installations to Reduce Cost of Power of Utility and Building Owners

Tuesday, March 30 **3:30 pm – 5:00 pm**

Definition and Control of Green Attributes (Room N230)

Moderators: **Robert Grace**, President, Sustainable Energy Advantage, LLC, USA
Edward Holt, President, Ed Holt & Associates, Inc., USA

Edward Holt, President, Ed Holt & Associates, Inc., USA
Regulatory Issues Affecting RECs
Dan Lieberman, Program Manager, Center for Resource Solutions, USA
The Current and Future Role of Tradable Renewable Certificates in Wind Energy Markets
Kevin Rackstraw, Eastern Regional Leader, North America, Clipper Windpower, Inc., USA
New Developments in NO_x and CO₂ Trading for Wind Projects

Amy Ellsworth, Renewable Energy Marketing and Sales Associate, CH2M HILL, USA
Regulatory Issues Affecting RECs
Ian Mays, Managing Director, Renewable Energy Systems Group, UK
Incentives for Wind Energy in Europe

Wind Turbine Loading: Conditions, Predictions and Measurements (Room N227b)

Moderators: **Kevin Jackson**, Principal Engineer, Dynamic Design Engineering, Inc., USA
Flemming Rasmussen, Head of Programme, Risø National Laboratory, Denmark

Neil Kelley, Principal Scientist, National Renewable Energy Laboratory, USA
An Initial Overview of Turbulence Conditions Seen at Higher Elevations Over the Western Great Plains
Hans-Peter Link, Dipl.-Ing., WINDTEST Kaiser-Wilhelm-Koog GmbH, Germany
Load Measurements on 'GE Energy 3.6s' According to IEC with Focus on Data Recording Inside the Gearbox with Sampling Rates up to kHz-Ranges
John Korsgaard, Head of R&D Department, LM Glasfiber, Denmark
Benefits of Conditional Monitoring of Wind Turbine Rotor Blade
Brian McNiff, President, McNiff Light Industry, USA
Developing a Wind Turbine Gearbox Load Description
Patric Kleineidam, Dipl.-Ing., University of Hannover, Germany
Fatigue Design of Support Structures for Offshore Wind Energy Converters

Component Vendor Forum (S100 Ballroom)

Moderators: **Walter Musial**, Senior Test Engineer, National Renewable Energy Laboratory, USA
Tim Olsen, Vice President – Project Development, HTH Wind Energy, Inc., USA

Soren Knudsen, Sales and Marketing Director, LM Glasfiber, Denmark
Cost-Efficiency and Reliability of Large Rotor Blades
Martin Kokoshka, Marketing Executive, Grafil Inc., USA
Value Chain of Carbon Fibers in Wind Energy: Critical Issues Associated with Properties, Production, Conversion and Supply of Carbon Fibers for Large Volume Consumers
Kris Kriofske, P.E., Dywidag-Systems International, USA
Concrete Tower Post-Tensioning and Foundation Engineering for Windmill Structures
Soeren Nyborg Rasmussen, Chief Consultant, Hempel A/S, Denmark
Moving Offshore: Corrosion Protection for Windturbines
James Schwartz, Wind Systems Sales, Second Wind Inc., USA
Second Wind's ADMS: Independent SCADA for Your Project

Transmission and Utilities: Challenges of Making it Work – Panel Discussion (Room N229)

This panel will consist of a mix of technical, legal and policy experts to discuss how wind projects gain access to the common electricity grid. The topics to be discussed include the terms and conditions for use of that grid to ship wind energy in interstate commerce, and how future transmission grid expansions are planned and executed to accommodate the growth in wind energy.

Moderator: **Jim Caldwell**, Policy Director, American Wind Energy Association, USA

Chris Ellison, Transmission Consultant, American Wind Energy Association, USA
Elliott Mainzer, Manager, Pricing and Transaction Analysis, Bonneville Power Administration, USA
Nicholas Miller, GE Energy, USA
Tim Poor, Director – Sales and Marketing, American Superconductor, USA
Steven Saylor, Chief Electrical Engineer, Vestas-Americas, Inc., USA



Advanced Small Turbine Technology (Room N228)

Moderators: **David Laino**, Engineering Consultant, Windward Engineering, LLC, USA
Peter Hjulær Jensen, Head of Programme, Risø National Laboratory, Denmark

Garrett Bywaters, Sr Mechanical Engineer, Northern Power Systems, USA
Evolution of the NorthWind® 100: From Niche Markets to Mainstream Small Turbine Applications
Trudy Forsyth, Small Wind Turbine Project Leader, National Renewable Energy Laboratory, USA
US Department of Energy's Distributed Wind Turbine Development Projects
David Jones, Program Manager, Southwest Windpower, USA
The Approaching Storm: Southwest Windpower's New Small Wind Turbine and the Growing Small Wind Turbine Market
Tod Hanley, Chief Engineer, Bergey Windpower Co., USA
The New Bergey XL.50, a Passively-Controlled, Low Cost, 50kW Turbine for Distributed Generation
Gerard Van Bussel, Associate Professor, TU Delft, Netherlands
The Development of Turby®, a Small VAWT for the Built Environment

Wednesday, March 31 8:30 am – 10:00 am

Plenary Session – Defining the Challenges and Implementing the Vision (S100 Ballroom)

Moderators: **Samuel Enfield**, Atlantic Renewable Energy Corporation/President-Elect, American Wind Energy Association
Sarvesh Kumar, Chief Operating Officer, Vestas RRB India Ltd/Chairman, Indian Wind Turbine Manufacturers Association

Patrick Conlon MP, South Australian Minister for Infrastructure, Energy and Emergency Service, Australia
Terry Hudgens, Chief Executive Officer, PPM Energy
Eddie O'Connor, Vice President, European Wind Energy Association, Belgium/Managing Director, Airtricity, Ireland
Matthew Simmons, President, Simmons & Company International, USA

Wednesday, March 31 10:30 am – 12:00 pm

Experience with Market Support Mechanisms (Room N230)

Moderators: **Christian Kjaer**, Policy Director, European Wind Energy Association, Belgium
Robert Hornung, President, Canadian Wind Energy Association, Canada

Libby Anthony, Chief Executive Officer, Australian Wind Energy Association, Australia
Market Support Mechanisms in Australia
Martin Hoppe-Kilpper, Head of R&D Division Information and Energy Economy, Institut für Solare Energieversorgungstechnik, Germany
Does it Blow Stronger in Europe? Current Experience with Supporting Wind Power in European Electricity Markets
Nigel Crowe, GE Wind, LLC, UK (invited)
Kevin Porter, Senior Analyst, Exeter Associates Inc., USA
Evaluating Experience with Renewables Portfolio Standards in the United States
Johannes Schiel, Technical Manager Windenergy and Fuel Cells, VDMA Power Systems (Verband Deutscher Maschinen und Anlagenbau; German Engineering Federation), Germany
Feed-In Tariffs: Fixed Price Mechanism in Germany

Forecasting Challenges and Solutions (Room N227b)

Moderators: **Jack Kline**, Consulting Meteorologist, RAM Associates, USA
Lars Landberg, Head of Research Programme, Risø National Laboratory, Denmark

John Zack, Principal, TrueWind Solutions, LLC, USA
A New Technique for Short-Term Wind Energy Forecasting: A Rapid Update Cycle with a Physics-Based Atmospheric Model
Kristin Larson, Senior Research Meteorologist, 3 Tier Environmental Forecast Group, Inc., USA
Advanced Short-Range Wind Energy Forecasting Technologies: Challenges, Solutions and Validation

Dennis Moon, Chief Scientist, WindLogics, Inc. (SSESCO), USA
Support Vector Machine Technology Coupled with Physics-Based Modeling for Wind Facility Power Production Forecasting
Henrik Madsen, Technical University of Denmark
A Protocol for Standardizing the Performance Evaluation of Short-Term Wind Power Prediction Models
Daniel Cabezon, M. Eng Mechanical, CENER, Spain
Comparison of Methods for Power Curve Modeling

Wind Energy Finance: Capital Markets and Future Trends (Room N228)

Moderators: **Jonathan Johns**, Partner, Renewable Energy Group, Ernst & Young LLP, UK
Michael Garland, Partner, Babcock & Brown LLP, USA

Paul Naumann, Managing Director, Fortis Capital Corp., USA
The Future of Bank Financing for the Wind Energy Market
Keith Martin, Partner, Chadbourne & Parke LLP, USA
Evolving Strategies and Current Tax Issues in Wind Deals
Terry Pratt, Director, Standard & Poor's US Utilities, Energy & Project Finance, Standard & Poor's, USA
Karlynn Cory, Policy Associate, Massachusetts Technology Collaborative, USA
Long-Term Revenue Support to Help Developers Secure Project Financing
Michael Corbally, Executive Vice President, XL Weather & Energy, USA
Weather Risk Management Products: Protecting Profitability from the Winds of Change

Large-Scale Wind Energy Development in Developing Countries: Barriers and Solutions, Tools and Case Studies (Room N229)

Since 1999, Winrock International has been collaborating with the US Agency for International Development through a cooperative agreement aimed at supporting the commercialization and diffusion of renewable energy technologies in developing countries and emerging economies. In 2003 and early 2004, in collaboration with Global Energy Concepts, Winrock developed the Windpower Development Toolkit. This toolkit, aimed at relevant audiences in developing country and emerging economy markets, is intended to help decision makers understand the key technical and policy environment issues relevant to wind power development, including perspectives of different wind industry participants and presents references to inform and educate interested parties. Winrock will be disseminating the publication widely and seeking opportunities to highlight issues for development of windpower in the developing country context at international forums.

This session will address certain barriers and challenges to windpower development in a number of developing country markets, and the approaches leaders have taken in overcoming these challenges. Presentations will focus on existing projects, planned projects and presenters will share important lessons learned from their efforts to develop windpower in their respective countries. The session will feature four presentations by key leaders in windpower development from Brazil, India, Mexico and the Philippines. The Windpower Development Toolkit will be presented to interested participants for review and comment.

Wednesday, March 31 1:45 pm – 3:15 pm

Offshore Policy and Experience (Room N230)

Moderators: **Benjamin Bell**, Offshore Sales – Americas, GE Energy, USA
Gordon Edge, Head of Offshore, British Wind Energy Association, UK

Bruce Bailey, President, AWS Scientific, Inc., USA
Making the Case for Offshore Wind Energy Development in the US: A Comparison of Land Versus Offshore Potential
Rainer Hinrichs-Rahlwes, Director-General, German Environment Ministry, Germany
Strategy of the German Government on the Utilization of Offshore Wind Energy: Current Status and Future Developments
Celene McIntyre, GE Energy, USA
Offshore Wind Energy Generation in the United States: Challenges and R&D Needs
Egon Poulsen, Head – Offshore Support/Group Sales and Marketing, Vestas International, Denmark
Yukimaru Shimizu, Professor, Mie University, Japan
Semi-Offshore Wind Park Experience in Japan



Resource Assessment and Micrositing Strategies and Experience (Room N227b)

Moderators: **Ron Nierenberg**, Consulting Meteorologist, USA
Erik Lundtang Petersen, Head of Department, Risø National Laboratory, Denmark

Kenneth Westrick, CEO, 3TIER Inc, USA
Strategic-Range Wind Energy Forecasting and Assessment: Methods, Benefits and Implications for Wind Energy Development in the 21st Century

Kevin Jackson, Principal Engineer, Dynamic Design Engineering, Inc., USA

Wind Turbine Generator Trends for Site Specific Tailoring

Jake Badger, Risø National Laboratory, Denmark

The SWERA Project KAMM-WAsP Numerical Wind Atlases: New Challenges and Results

Russell Derickson, Associate, CPP Wind Engineering Consultants, USA

Resolving Difficult Issues of Wind Power Micrositing in Complex Terrain

Robert Paine, Senior Meteorologist, ENSR Corporation, USA

Assessments of Wind Power Potential Using New Meteorological Archives and Doppler Sodar Measurements: Strategies and Experience

Development Challenges and Solutions (Room N228)

Moderators: **Paul Koehler**, Director, Business Development, PPM Energy, Inc., USA
Budhavarapu Rajsekhar, Engineer, Energy Research Center of the Netherlands ECN, Netherlands

Joel Klipp, President, ANEMOS Consulting, Inc., USA

Fatal Flaw Analysis, Minimizing Your Site Development Risk

Samuel Panarella, Attorney, Stoel Rives LLP, USA

Untying the Knot: Acquiring Land Rights in a Competitive Environment

Craig Cox, Sr. Associate, BL&A, USA

From Snack Bars to Rebar: How Project Development Boosted Local Businesses Up and Down the Wind Energy 'Supply Chain' in Lamar, Colorado

Jeffrey Anthony, Manager, Renewable Energy Strategy/Navigant Consulting, USA

Making Wind Energy Part of Your Mainstream Generation Mix

William Ambrose, President, Emerging Energy Research LLC, USA

Remapping the Value Chain as Wind Energy Scales

Finance: Lowering the Cost of Capital – Panel Discussion (Room N229)

This panel will consider the impact of key changes in the global wind market on the cost of capital for the wind power industry. Market growth is leading to new, well capitalized entrants into the manufacturing side such as GE who can use balance sheet strength and financial products to make projects more attractive to investors. The panel will include a representative from the new breed of fund investor, attracted by reducing risk and long-term stable returns, who provide the potential for growth in low cost equity.

Moderator: **Michael Davies**, Managing Director, FreeStream Capital Partners Ltd., USA

Wednesday, March 31 **3:30 pm – 5:00 pm**

Focus on the Midwest of the USA (Room N230)

Moderators: **Andy Cukurs**, NEG Micon, USA
John Dunlop, Northern Plains Regional Manager/ Standards Manager, American Wind Energy Association, USA

Steve Clemmer, Research Director, Union of Concerned Scientists, USA

The Costs and Benefits of Increasing Wisconsin's Renewables Portfolio Standard

Mark Eilers, Director of Origination, GE Energy, USA

Best Practices for Wind Development in the Midwest

Beth Soholt, Director, Wind on the Wires, USA

Wind on the Wires: Bringing Wind Power to Market in the Upper Midwest

Jeffrey Haase, C&I Program Manager, Minnesota Department of Commerce, USA

Minnesota State Energy Office Community Wind Activities: How State Programs Can Help Communities Realize a Community Owned Wind Energy Project

Howard Learner, Executive Director, Environmental Law & Policy Center, USA

Clean Energy Development: A Win-Win for the Midwest's Economy and Environment

Future Applications (Hydrogen, Storage, Desalination, etc.) (Room N227b)

Moderators: **Dave Blittersdorf**, President/CEO, NRG Systems, Inc., USA
Peter Coppin, Director – Wind Energy Research Unit, CSIRO Atmospheric Research Pye Laboratory, Australia

Hala Ballouz, Senior Electrical Engineer, Electric Power Engineers, Inc., USA

Impact of Energy Storage on Generator Availability and System Reliability: The Cost Benefits Applied to a Wind/Storage System

Bob Bechtold, President, Harbec Plastics, USA

Exploring Opportunities for Renewable Energy-on-Demand through Hydrogen

Jack Ihle, Senior Associate, Platts Research & Consulting, USA

The Technical and Economic Feasibility of Integrated Wind and Coal Power Development

Gary Seifert, Program Manager, INEEL, USA

High Penetration Wind Diesel Hybrid Power Systems Saves Millions in the South Atlantic Ocean

Rymal Smith, Director, Business Development, Stuart Energy, Canada

Hydrogen Generation from Wind Power Using Advanced Alkaline Water Electrolysis Systems

Siting, Permitting and NIMBY Issues (Room N228)

Moderators: **Abby Arnold**, Resolve, Inc., USA
Tom Gray, Deputy Executive Director, American Wind Energy Association, USA

Alison Hill, Head of Communications, British Wind Energy Association, UK

Libby Anthony, Chief Executive Officer, Australian Wind Energy Association, Australia

Industry-Community Collaboration on Landscape Value

Andy Linehan, Vice President, Portland Area Manager, CH2M HILL, USA

Emerging Issues in Siting and Permitting Land-Based Wind Energy Projects in the US

Thomas Priestley, Senior Environmental Planner, CH2M HILL, USA

Addressing the Aesthetic Challenges Faced by the Wind Industry: Research to Date and Insights from the Environmental Design Research Paradigm

Wallace Erickson, Biostatistician and Project Manager, WEST Inc., USA

Bird and Bat Mortality and Collision Risk at Wind Projects: the Latest Data and Science

Offshore: Opportunities and Challenges – Panel Discussion (Room N229)

The panel will air perspectives about relative offshore wind energy opportunities and barriers in Europe and the US. Technical, environmental and market factors will be discussed. How important is government policy and leadership in promoting offshore development? Is a US strategy needed? What pitfalls may be looming in Europe? How can development and operational risks be managed? Are offshore projects financeable? These and other provocative issues will determine the future course of offshore wind energy.

Moderators: **Bruce Bailey**, President, AWS Scientific, Inc., USA
Egon Poulsen, Head of Offshore Support/Group Sales & Marketing, Vestas International, Denmark

Gordon Edge, Head of Offshore, British Wind Energy Association, UK

Paul Dowling, Chief Operating Officer, Airtricity, Ireland

Peter Mandelstam, Bluewater Wind, USA

Christian Nath, Germanischer Lloyd WindEnergie GmbH, Germany

Craig Olmsted, Vice President – Projects, Energy Management, Inc., USA



In addition to the verbal presentations throughout the conference sessions, **Global WINDPOWER 2004** features over 130 visual presentations on the following wind energy topics. Check out the poster presentations in the lobby of Exhibit Hall C and meet the authors during the Poster Reception being held at the same location on Sunday, March 28 from 6:00 – 7:00 pm just prior to the Opening Reception.

Christina Aabo, NEG Micon A/S, Denmark
How Do We Think and Design Wind Turbine Parks as a Power Plant?

Christina Aabo, NEG Micon A/S, Denmark
Finding an Optimal Wind Turbine for Offshore Power Production

Tom Acker, National Renewable Energy Laboratory, USA
Opportunities to Optimize Hydropower and Wind Energy Systems Through Coordination, Cooperation, or Integration

Thomas Ackermann, Dipl.-Ing., Royal Institute of Technology, Sweden
Comparison of Interconnection Regulations for Wind Farms World Wide

Chuichi Arakawa, The University of Tokyo, Japan
Advent of Wind Power Plant in Tokyo through Collaboration with Art

Peter Asmus, Pathfinder Communications, USA
Permitting Small-Scale Wind Projects: Learning from the California Experience

David Baker, Phoenix Engineering Inc., USA
Wind Server: An Industrial Data Management and Analysis Tool for Prospectors and Developers

Andreas Basteck, Voith, Germany, USA
New Concept of Drive Train for Wind Turbines with Variable Speed Hydrodynamic GearBox without Power Electronic

Nate Blair, National Renewable Energy Laboratory, USA
Projected Impact of Federal Policies on US Wind Market Potential

Chris Bley, Rope Partner LLC, USA
Worker Safety and Corporate Responsibility: The Necessity of Wind Turbine Tower Rescue Training and Equipment

Ruddy Blonbou, University of French West-Indies, France
Wind Speed Fluctuations Analysis for Short Time Scales Electricity Networks Management

David Bradley, Buffalo Wind Action Group, USA
A Great Potential: The Great Lakes as a Large-Scale Electrical Energy Source Using Modern Offshore Wind Turbines

Sandy Butterfield, National Renewable Energy Laboratory, USA
Potential of Offshore Wind Technology in the United States

Garrett Bywaters, Northern Power Systems, USA
Certification of the NW100

John Calaway, Superior Renewable Energy, USA
Experimental Verification of a Method for Measuring High-Level Wind Speeds Using Tall Towers

Jerold Chavkin, Aviation Systems Inc., USA
Dealing with the Aviation System Impacts of Wind Turbine Structure Development

Yitung Chen, University of Nevada Las Vegas, USA
An H-Adaptive Atmospheric Finite Element Model for Wind Turbine Siting

Godfrey Chua, Emerging Energy Research LLC, USA
The Global Wind Industry: Competitive Dynamics and Industry Trends

Nolan Clark, USDA–Agricultural Research Service, USA
Maintenance Issues During 20 Years of Wind Turbine Operation

Louis Coakley, Florida Power & Light Company, USA
Environmental Auditing: Why Wind?

Peter Coppin, CSIRO Atmospheric Research, Australia
Wind Energy Production Forecasting in the Australian Context

David Corbus, National Renewable Energy Laboratory, USA
Small Wind Turbine Energy Capture Analysis

Jason Cotrell, National Renewable Energy Laboratory, USA
Hydrogen Storage in Wind Turbine Towers: Design Considerations

Martin Crotty, SeaWest WindPower, Inc., USA
Condition-Based Monitoring Tool for Wind Energy Projects: A Case Study and a Cost Benefit Analysis

Franco D'Alessandro, ERICO Inc., USA
A Six Point Approach to Lightning Protection for Wind Energy Facilities

Radu Danescu, North Dakota State University, USA
Verticle-Axis Turbine Modified for a Cost-Effective, Small Off-Grid Wind Power System

Lisa Daniels, Windustry, USA
Community Wind Energy: An Emerging Market Force

Graeme Dennis, Corrs Chambers Westgarth, Australia
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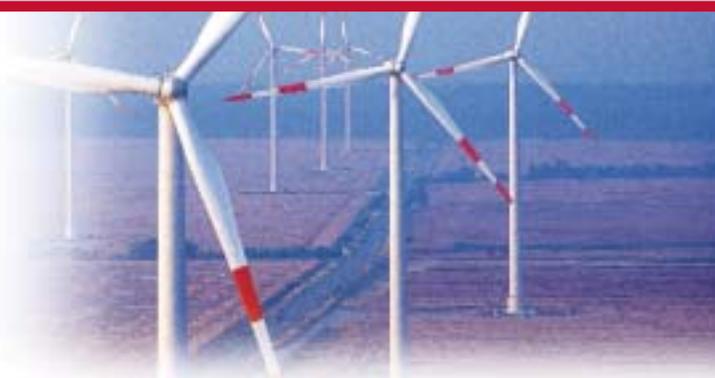
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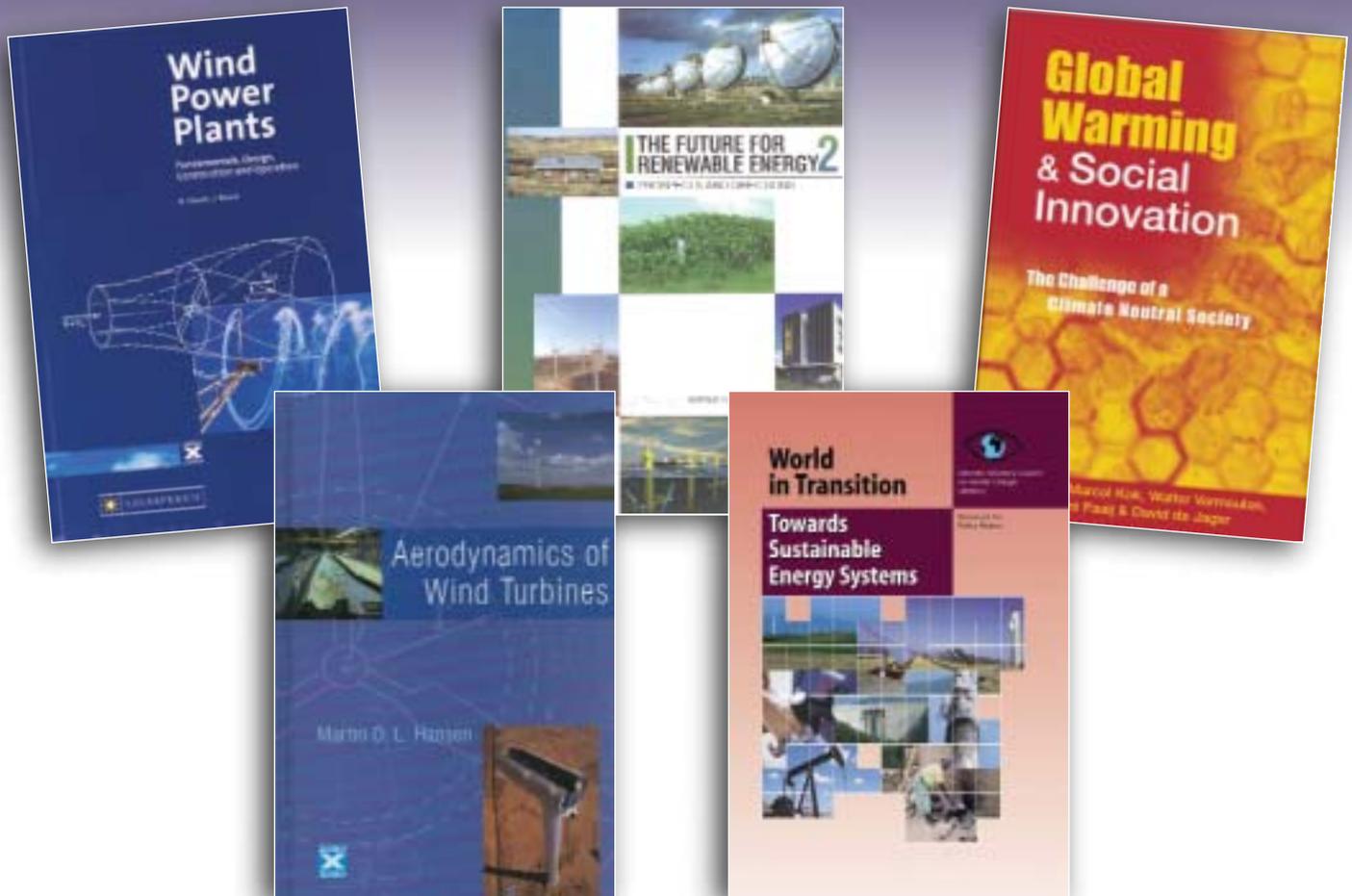
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