

UWIG/NREL Industry-University Workshop Session VII – Sources of Support

Anjan Bose, Washington State Univ.

Pete Sauer, Univ. of Illinois, Urbana-Champaign

Ned Mohan, Univ. of Minnesota

Chen-Ching Liu, Iowa State Univ., Session Chair

Wind Power Technology

- **Electrical Design**
 - Electric machines and drives
 - Power converters and electronics
 - Ancillary equipment
- **Mechanical Design**
 - Aerodynamics
 - Turbine blades and tower

Wind Power Control

- **Control System Design**
 - Wind turbine control system
 - Supervisory control
 - Wind farm interface through SCADA
- **Reactive Compensation**
 - Capacitor compensation
 - SVC and STATCOM

Impact on Power Grids and Energy Systems

- Models and Techniques
 - Power flow
 - Stability studies
 - Fault currents
 - Transients
 - Protection
- Aggregate Models
- System Planning
- Energy planning

System Operation

- Unit commitment and dispatch
- Reserve requirements
- Managing uncertainties
- Improved system operation via wind forecasting
- Control performance standards

Wind Power & Market

- Capacity value and capacity credit
- Wind integration in electricity markets
- Economics of wind power
- Impact on climate change