7th Annual
Wind and Solar Interconnection Workshop
May 21-22, 2013, Golden, Colo.

Sponsor:

• Utility Variable-Generation Integration Group (UVIG)

Co-sponsors:

• American Public Power Association - Demonstration of Energy-Efficiency Developments (DEED)
• DOE Wind and Water Power Program - Wind Powering America Initiative
• DOE Solar Program
• National Renewable Energy Laboratory (NREL)
• National Rural Electric Cooperative Association
• Western Area Power Administration

Are you ready to face the challenges, issues and opportunities of integrating variable generation into your power mix? This two-day workshop brings together industry experts from utilities, government and national laboratories to answer your questions about interconnecting wind and solar plants and other distributed generation applications to electric distribution systems. Speakers will go beyond the distributed system for in-depth explorations of transmission, energy imbalance markets, power operations training and renewable integration studies. NREL will host the first day at its state-of-the-art Energy Systems Integration Facility (ESIF), and the second day will take place at Western's Electric Power Training Center (EPTC). Both facilities are in Golden, Colo.

The workshop includes a "hands on" introduction to UVIG's Internet-based tools designed to assess a distributed wind project's impact on the local distribution system. Training will cover the theory behind each tool and demonstrate their use with actual data. Participants will tour NREL's ESIF, where researchers and support staff engineer, design, test and analyze components and systems to advance the integration of renewable electricity into the U.S. electricity infrastructure.

Western's EPTC instructors will give a tour of the EPTC center, where participants will have the opportunity to observe a demonstration of the EPTC's hands-on miniature power system. The model includes a wind farm simulator developed in partnership with the NREL and DOE's Wind and Water Power Program.

Continuing education credit will be available for this workshop.

Speakers include:

• *Randy Udall,* Association for the Study of Peak Oil USA
• *Steve Beuning,* Xcel Energy

Fees and registration:

To register online, visit:
http://www.regonline.com/Register/Checkin.aspx?EventID=1194832

Workshop Registration Fee: $300; Webinars $99

Registrations not paid by April 15 must be secured in advance by credit card or risk cancellation.

Questions? Contact **info@uwig.org.**

A limited number of registrations are available for university/college students to attend at no charge through UVIG's scholarship program.

For more information contact:

Sandy Smith
Utility Variable Integration Group
Phone: 865-218-4600, ext. 6141
Fax: 865-218-8999
Email: **sandy@uwig.org**

Lodging information:

Lodging information is available at
http://www.uwig.org/interconnectionworkshop2013.html

May 21 agenda

NREL Energy Systems Integration Facility
15013 Denver West Parkway
Golden, Colo. 80401

7:30 a.m. Continental breakfast at ESIF

8:00 Welcome and introductions

8:30 Wind/solar integration studies and FAQs

9:15 Distributed wind integration experience (Webinar 1)

10:00 Break

10:30 Distributed solar integration experience (Webinar 2)

11:15 UVIG's distributed wind and solar activities (Webinar 3)

11:30 Wind and solar project experiences

Noon Lunch speaker – *Importance of resource planning: An agnostic approach*

1:00 p.m. Technical challenges with high penetration solar

2:00 DOE solar and wind program update

2:45 Afternoon break

3:15 Energy storage

4:00 NREL Energy Systems Integration Facility (ESIF) (Webinar 4)

4:30 Tour ESIF capability to integrate large renewable energy projects into the grid

5:30 Adjourn

May 22 agenda

Electric Power Training Center
1667 Cole Boulevard, Building 19 - Suite 152
Golden, Colo. 80401

7:30 a.m. Continental breakfast at EPTC

8:00 Distributed resources in micro-grids; Lab exercises: Wind/PV/storage example in HOMER

9:45 Break

10:15 Application of the UVIG feeder simulator; UVIG lab exercises: Multi-speak import, voltage control, over-current protection

Noon Lunch speaker – *Utility solutions to develop more renewable energy projects*

1 p.m. Standards and interconnection requirements; UVIG lab exercises: UVIG screening tool, flicker evaluation

2:45 Opportunities for utility demand response programs

3:15 Break

3:45 Economics of distributed renewable projects; Lab exercises: Capacity factor, Production Tax Credit, Clean Renewable Energy Bonds

5:00 Tour of Western's EPTC and wind simulator (interactive demonstration of wind energy operations)

6:00 Workshop adjourned

UVIG

η DEED

U.S. DEPARTMENT OF **ENERGY**
Energy Efficiency & Renewable Energy

NREL

National Rural Electric Cooperative Association
A Touchstone Energy® Cooperative

Western AREA POWER ADMINISTRATION