

Accelerating the Integration of Wind Generation into Utility Power Systems



The appeal and economics of wind power have never been stronger, but this unique form of generation requires special engineering and operating strategies. Today's sophisticated wind plants require specialized technical knowledge.

Your organization's success with wind power depends on its understanding of the technical needs and changing dynamics of the wind industry.

UWIG — The Utility Wind Integration Group — is the leading resource for technical know-how about integration of wind generation. **UWIG** is the only organization exclusively focused on delivering technical knowledge and information about interconnection and operation of wind plants on electric power systems.

"You get a good introduction into the wind energy markets, who the players are, and what the issues are. The networking about what goes on with specific pieces of equipment is excellent."

— Henry Durrwachter, Luminant

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Annual Membership Dues

(based on gross revenue)

Regular (Utility/ISO) Members

- \$ 5,000 (greater than \$300 million)
- \$ 2,000 (\$30 million to \$300 million)
- \$ 1,000 (less than \$30 million)

Regular members have voting privileges, are represented on the **UWIG** Board of Directors, and can participate in all **UWIG** technical meetings, business meetings, and workshops.

Associate (Corporate) Members

- \$2,000 (greater than \$1 million)
- \$ 1,000 (less than \$1 million)
- \$ 500 (Academic/Government Members/ Individual Consultants)

Associate members receive all of the **UWIG** benefits other than voting privileges and representation on the **UWIG** Board of Directors.

For membership applications and information, visit www.UWIG.org.

Ways to Contact **UWIG**

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- Phone (865) 218-4600, ext. 6141
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- Mail Utility Wind Integration Group
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In cooperation with the U.S. Department of Energy

Connect to The Wind With Confidence



Have Questions About Wind Power?
UWIG Has the Answers

Blades of a wind turbine spin in the prairie breeze. Consumers see renewable power. Developers and landowners see business opportunities.

What utilities and system operators see depends largely on their expertise.



Gain New Knowledge From Industry Experts

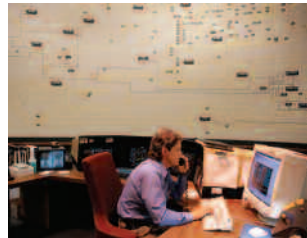
Formed in 1989 by a group of utilities, **UWIG** provides excellent peer-to-peer networking for its members. It annually hosts technical meetings, workshops and a short course; publishes technical papers and reports; conducts specialized research and development and offers a variety of resources on its Web site, www.UWIG.org.

“UWIG is the premiere technical resource on wind generation, their work on wind forecasting being the most recent example.”

— Dale Osborn,
Midwest ISO

UWIG can benefit your organization by helping you:

- Move up the learning curve. Head off problems, and quickly resolve issues that do come up.
- Learn about forecasting output from this variable generation resource.
- Understand how evolving grid codes impact wind plant behavior.
- Better predict how wind plants will interact with conventional generating units.
- Take advantage of tools for modeling wind turbines in load flow and stability analyses.
- Understand voltage regulation and flicker issues.
- Understand the pros and cons of different wind turbine sizes and locations on distribution systems.



Masterfile



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UWIG has expanded its technical outreach, offering members five user groups.

- Wind Plant Modeling and Interconnection (Building on WECC’s groundbreaking wind turbine and wind plant modeling work)
- Operating Impacts and Integration Studies (Includes valuing of ancillary services)
- Distributed Wind Applications (Economics, system protection, and voltage regulation)
- Market Operation and Transmission Policy (Learn how evolving markets and policies are affecting wind power)
- Wind Turbine Operations and Maintenance (Share experiences with other wind turbine owners)

An organization would have to spend tens of thousands of dollars every year to try to duplicate the research results and knowledge base available through membership in **UWIG**. Membership also provides valuable access to colleagues who have direct experience in wind. All industry participants — utilities, ISO/RTOs, project developers, turbine vendors and consultants — receive value from their membership in **UWIG**.

Get the engineering know-how you need to be effective. Put **UWIG**’s experience and technical depth to work in your organization! Fill out a membership application, available at www.UWIG.org, and join today.

“There is no other place in the country where wind turbine owners can meet with their counterparts and have a detailed and candid discussion on O&M experiences.”

— Billy Joe Cutsor,
Municipal Energy Agency of Nebraska



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How UWIG Research Is Helping Utilities Today

Understand the System Impact of Wind

Utilities need a good understanding of the full impact of operating a wind plant on their system. **UWIG** sponsored the first-ever comprehensive study of the cost of ancillary services associated with wind plant operation. This ongoing activity addresses time scales ranging from system regulation (seconds to minutes), up to and including unit commitment (hourly scheduling up to one week in advance).

Assessing Distribution System Impacts

Many utilities must understand the system impacts of single turbine installations and clusters of turbines on distribution feeders. **UWIG**’s Distributed Wind System Impacts project has brought clarity to key issues such as voltage regulation, flicker, coordination of overcurrent protection devices, and economics.

“UWIG represents the utility’s perspective. It’s a competent technical group that can assess the cost impacts of wind generation on a utility system.”

— Rick O’Conor,
We Energies



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Basin Electric Power Cooperative