



Power Systems Engineering Research Center

Transforming the Grid from the Distribution System Out

Tom Jahns

Robert Lasseter

Electrical and Computer Engineering
University of Wisconsin-Madison
jahns@engr.wisc.edu

PSERC Public Webinar

Tuesday, November 4, 2014

2:00-3:00 p.m. Eastern Time (11:00-12:00 p.m. Pacific)

Description: Declining prices coupled with tax incentives are driving increased use of distributed energy resources in the electrical utility system. As a result, more power is being generated in homes, businesses, and commercial buildings and used locally. This jump in power production at the distribution level presents a challenge to the traditional electrical transmission and distribution system based on centralized power generation and control. The centralized system operated by utilities was not designed for the flexible load tracking required by renewables or the control of large numbers of distributed electrical energy resources. An alternative approach that holds promise is a *dynamic distribution system* that includes a Distribution System Operator as the local balancing authority. As conceived, the dynamic distribution system uses local sources to track loads, stabilize voltage and frequency, and smooth intermittent renewable energy generation providing a predictable, constant load profile to the utility. This new dynamic distribution system connects central and local electricity generation, storage, microgrids, and loads with a marketplace that enables energy transactions, such as payments passing between buyers and sellers of energy at the local distribution level. This new system provides a promising framework for distributed energy resources to deliver the same services at a better price, with decreased power losses, decreased emissions, and better reliability. The challenges and opportunities associated with this dynamic distribution system architecture will be discussed in this presentation. [For a white paper on the topic of this webinar, [click here](#).]

Biographies:

Tom Jahns is the Grainger Professor of Power Electronics and Electrical Machines in the Department of Electrical and Computer Engineering at the University of Wisconsin-Madison. Jahns' research interests span the technical fields of electrical machines, power electronics, and adjustable-speed drives. He is actively involved in renewable energy research in the areas of

wind power generators and electrical microgrids for sustainable buildings. A major theme of his research is the integration of power electronics into electric machines, loads, and sources to reduce cost and increase reliability.

Robert Lasseter is an Emeritus Professor in Electrical and Computer Engineering at the University of Wisconsin-Madison. His research interests focus on the application of power electronics to utility systems. This work includes microgrids, FACTS controllers, use of power electronics in distribution systems, and harmonic interactions in power electronic circuits. Lasseter is the technical lead of the CERTS Microgrid Project, a Life Fellow of IEEE, past chair of IEEE Working Group on Distributed Resources, and IEEE distinguished lecturer in distributed resources.

Registration for Webinar Participation: None required. There is no charge for participating!

Participation by Webinar: There are several options for participating.

- Recommended option: We will be using the Adobe Connect 9 webinar platform. You will be able to watch the presentation slides on your computer from the designated site <https://connect.asu.edu/pserc> and listen to the webinar through your computer's speakers or headphones. To join the webinar, enter firstname lastname (organization). [Click here](#) for the connection details and instructions for testing your connection. If you cannot hear the presenter, check to make sure your speaker is not muted in Adobe Connect. You may also be able to use the app "Adobe Connect™ Mobile" to participate via smartphone or tablet.
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Assistance: If you have any questions, please call 480-965-1643 or email pserc@asu.edu.

PSERC's Webinar Coordinator: Venkataramana Ajjarapu, Iowa State University, vajjarap@iastate.edu.

Professor Ajjarapu welcomes your feedback on PSERC webinars and suggestions for future ones.