

THE DEPARTMENT OF EECS & FEEDER Center
Present the Fall 2014 EECS Distinguished Lecture



Dr. Scott Backhaus
Los Alamos National Laboratory

**“Design of Resilient Distribution Grids
and Grid-Interactive Building Controls”**
Friday, October 31, 2014 • 10:30 a.m. • HEC 438

ABSTRACT

Los Alamos National Laboratory performs fundamental research on algorithms for design, control and optimization of electrical grids and other interdependent infrastructures, and applies those algorithms to perform analysis for federal agencies and utilities. After a brief overview of these activities, two topics will be discussed in greater detail. First, load is expected to play a greater role in control of the electrical grid--not just under stressed conditions such as system peaks, but in a more continuous fashion. Experiments using the heating, ventilation and air conditioning (HVAC) system of a large commercial building to provide frequency regulation are described. Results include the performance of the deployed controls versus PJM's frequency regulation metrics and energy costs of providing this service. Second, recent extreme weather events and their associated social and economic impacts are drawing attention to the need for distribution grids to be more resilient to these beyond-design-basis events. Progress towards a design tool that enables the optimal selection of infrastructure hardening and resilience upgrades to meet a prescribed level of post-extreme-event network performance will be described.

BIOGRAPHY

Scott Backhaus received his Ph.D. in Physics in 1997 from the University of California at Berkeley. He came to Los Alamos in 1998 as a Director's Funded Postdoc from 1998 to 2000, a Reines Postdoctoral Fellow from 2001 to 2003, and a Technical Staff Member from 2003 to the present. He is currently the principal investigator for several LANL projects funded by the Office of Electricity in the U.S. Department of Energy and is LANL Program Manager for Office of Electricity.

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