



EE 500 GRADUATE COLLOQUIUM

Spring 2014

*You are cordially invited to*

**“Confidentiality-Preserving Power System  
Models for Shared Computing”**

By

**Dr. Bernie Lesieutre**

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and

Electricity Markets and Policy Group

Lawrence Berkeley National Laboratory

**Date: February 20, 2014**

**Time: 4:00 pm**

**Location: 160 Willard Bldg**

## **Abstract**

The electric power grid is one of the nation's critical infrastructures and there is considerable concern about its vulnerability to malicious physical and cyber attacks. The detailed data describing grid topology and components is considered sensitive and can only be shared through a Critical Energy Infrastructure Information (CEII) nondisclosure agreement. This tightly controlled access to power grid information limits advances in power system research and in power system operations. Researchers who work with the data must mask their results in publication, and their results cannot be openly and independently verified by other researchers. Operation of power systems must tend towards the use of centralized and dedicated computing and controls, around the model's access points, essentially eliminating the possibility of using advanced shared computing platforms, such as so-called cloud computing, and raising concerns about distributed computing and control generally in this field.

This seminar discusses the development of a means to mask power system information that will allow computation on power system models without revealing the sensitive details in the models. The work is motivated by research in cloud computing on masking optimization models through a series of transformations. In our work, we show that these techniques can be used to preserve confidentiality of the DC and certain AC optimal power flow problems.

## **Biography**

Bernie Lesieutre is Professor of Electrical Engineering at the University of Wisconsin-Madison. He maintains a research appointment with the Electricity Markets and Policy Group at Lawrence Berkeley National Laboratory, where he worked for several years prior to joining Wisconsin. He was previously Associate Professor of Electrical Engineering at MIT. He received B.S., M.S., and Ph.D. degrees in Electrical Engineering from the University of Illinois. His research interests involve the modeling, monitoring, and analysis of electric power systems.