



Power Systems Engineering Research Center

Agent-Based Test Beds for Power Industry Research, Teaching and Training

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Research Tele-Seminar

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

Description

Wholesale power markets are complex systems encompassing structural constraints, institutional arrangements, and the behavioral dispositions of human participants. To be compelling and useful, studies of such systems must take all three elements into proper account. This talk will discuss the potential usefulness of *agent-based test beds* as research, teaching, and training tools for the exploratory study of wholesale power markets. An agent-based test bed is a computational rendering of a real-world process as a dynamic system of interacting agents. The "agents" are encapsulated bundles of data and methods whose empirical counterparts can range from passive world features with no cognitive function (e.g., power transmission grids) to sophisticated decision makers with learning capabilities (e.g., electricity traders). General points will be concretely illustrated using experimental findings determined by means of *AMES (Agent-based Modeling of Electricity Systems)*, an agent-based test bed designed for the study of restructured wholesale power markets operating over AC transmission grids with nodal pricing. AMES was first released as open-source software at the IEEE PES General Meeting (June 2007) and is available at the website of the IEEE Task Force on Open-Source Software (http://ewh.ieee.org/cmte/psace/CAMS_taskforce/index.htm).

Biography

Leigh Tesfatsion is Professor of Economics and Mathematics at Iowa State University. She specializes in Agent-based Computational Economics (ACE), the computational study of economic processes modeled as dynamic systems of interacting agents, with a particular focus on restructured electricity markets. She is an active participant in a number of IEEE Power Engineering Society technical committees, working groups, and task forces focusing on power economics issues, and is a co-organizer (with Chen-Ching Liu) of the [ISU Electric Energy Economics \(E3\) Group](#). She is an associate editor for the *Journal of Economic Dynamics and Control*, *Applied Mathematics and Computation*, and the recently established *Journal of Energy Markets*. She also serves on the editorial board for the *Journal of Economic Interaction and Coordination* and for the book series *New Dimensions in Networks* (Edward Elgar Publishers).

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Participation by Phone: Live audio will be provided via a teleconference phone bridge. After registering, you will be sent connection information for the conference phone bridge. You will need to follow along with the presentation slides. The presentation slides will be posted on February 5 on the [PSERC website](#). The archived audio-slide production of the tele-seminar will be available by web-streaming a day after the tele-seminar. There is a 30 to 40 second delay between the real-time presentation and the webcast, so if you listen in on the phone bridge, you will need to download and display the slides locally.

Registration for Webcast Participation: Not required.

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Seminar Logistics and Assistance

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Shmuel welcomes feedback on the tele-seminars and suggestions for future ones.