Energy Economics and Policy: Courses and Training (4.5)

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PSERC Future Grid Initiative
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Motivation: Economics Matters
Impact of PJM Expansion on Day-Ahead Net Exports, Midwest → East

Source: Mansur and White, 2012
What does energy economics have to do with smart grids?

- The effectiveness of new technology depends upon *if* and *how* it is used.
- In Electricity, adoption and use depends upon
  - Regulatory environment
  - Market structure and organization
  - Consumer behavior
  - Incentives!
Objectives

• Instruct future energy industry professionals and researchers on the economics of energy markets.
• Convey real-world experience blending advance micro-economic concepts and energy-industry case-studies and simulations.
• Expand and refine interactive learning tools such as the Electricity Strategy Game.
• Provide exposure to the leading economic research on the organization, regulation, and operation of energy markets
Multiple Target Audiences

• Masters-Level Course aimed at graduate students in economics, engineering, sciences and public policy offered through Haas School of Business

• Research (Ph.D) level material offered through UC Davis Department of Economics

• Practitioner-level material offered through short courses at ISOs and UC campuses
  • Attended by staff from utilities, ISOs, PUC’s and other regulatory agencies
Topics

• Regulating Natural Monopolies
  • Incentives, productivity, consumer prices

• Regulatory retail pricing
  • Dynamic pricing, non-linear tariffs, consumer behavior

• Market Structure and Competition
  • Oligopoly, Vertical Integration, Transportation

• Environmental Regulations and Energy Markets
  • Cap-and-trade, Clean-air act, alternative energy policy
Electricity Strategy Game

• Teams evaluate and purchase generation portfolios
• Portfolios are bid into daily spot markets
• Teams experience impact of varying market design elements
  • Auction Design, Transmission congestion, forward contracts
• Versions now in use at UC Berkeley, Stanford, Michigan, MIT, Yale, Dartmouth and others.
### Edit Team Heckman Portfolio Details

**Period 7**

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Accessing the Materials

• Course Materials
  • Syllabi, Extensive reading lists, Lecture Materials, Thought questions, Exams.

• Electricity Strategy Game
  • Software and documentation for running the game
  • Web-based bidding interface and results (registration required)

• Materials will be made available online for access by instructors at accredited non-profit institutions.