

Transmission Reliability Research Review

Overview of Reliability and Markets

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Reliability and Markets

- Focus: Develop a comprehensive set of integrated market/engineering design principles and tools for a restructured electricity business.
- Program Goal: By 2009, design, perform, and interpret market simulations that validate regional transmission organization's (RTO) electric market designs prior to full scale implementation, and assist Federal, State, and RTO decision makers in establishing electricity market designs.



Reliability and Markets - Roadmap

System Planning
Operation and
Monitoring

**GOAL: INTEGRATED MARKET DESIGN:
THEORY, EXPERIMENTS AND TOOLS**

Advanced Design and Monitoring Tools

Development of analytical tools and PowerWeb platform for experimentation

- Unit Commitment
- Price Spikes
- Unit Withholding
- Collection of Market Data

1999-2001

Market assessment theory and experiments:

- Market Power
- Congestion Management
- Price Volatility

2000-2004

Develop designs for multi-dimensional markets:

- Energy and Demand
- Energy and Reserves
- Energy and Environmental
- Composite Markets

2002-2006

Prototype New Market Design and Evaluation Tools

- Automated market monitoring
- Tools for evaluating new market ideas

2004-2008



Reliability and Markets

Objective:

Support fair market operation while ensuring potential service suppliers have the proper information and adequate incentives to maintain reliability.

Approach:

- Develop technologies to enable customer participation in providing reliability resources
- Develop market simulation tools to guide decision-making by system operators
- Assess effectiveness of emerging market mechanisms to meet reliability needs



Presentations

Testing Multi-Dimensional Markets for Electricity and Ancillary Services Using PowerWeb – Tim Mount, PSERC/Cornell University

The Effect of Customer Participation in Electricity Markets: An Experimental Analysis of Alternative Market Structures – Dick Schuler, PSERC/Cornell University

Agent-Based System Planning Tools – Sarosh Talukdar, PSERC/Carnegie Mellon University

Market Monitoring Tools – Bernard Lesieutre, LBNL

