

Transmission Reliability Research Review

Overview of Load as a Resource

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Load as a Resource

- Focus: Improve reliability and system efficiency through responsive demand
- Program Goal: By 2008, demonstrate demand response program designs and systems that allow load to participate in the reserve markets, and enable customer loads to respond to real time prices



Load as a Resource - Roadmap

**GOAL: IMPROVED RELIABILITY AND
SYSTEM EFFICIENCY THROUGH
RESPONSIVE DEMAND**

Scoping Studies:

- Load-as-a-Resource Scoping Study
- Value of Price Responsive Load (PRL)
- Identify Enabling Technology Gaps
- Assess DR Program Designs

2000-2004

Proof of Concept:

- Prototype New PRL Approaches (e.g., for Spinning Reserves)
- Fill Enabling Technology Gaps (anticipated solicitation)
- Assess Benefits of PRL and Ancillary Services

2001-2004

Demonstration Projects:

- Demonstrate PRL for Spinning Reserves and other Ancillary Services
- Demonstrate PRL w/ Novel Enabling Technologies
- Assess Benefits of PRL
- Estimate the Technical/Market Potential for Load Participation

2003-2005

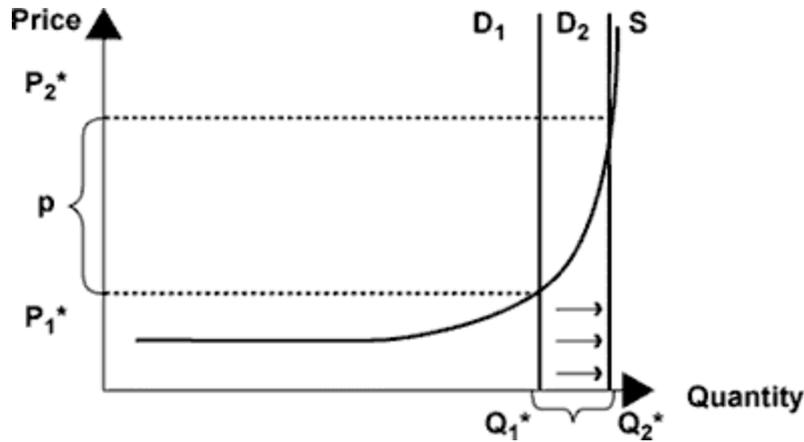
Commercial Acceptance:

- Integration of Responsive Loads and DER
- Research on Advanced Technologies and Controls for PRL
- Program Design and Evaluation

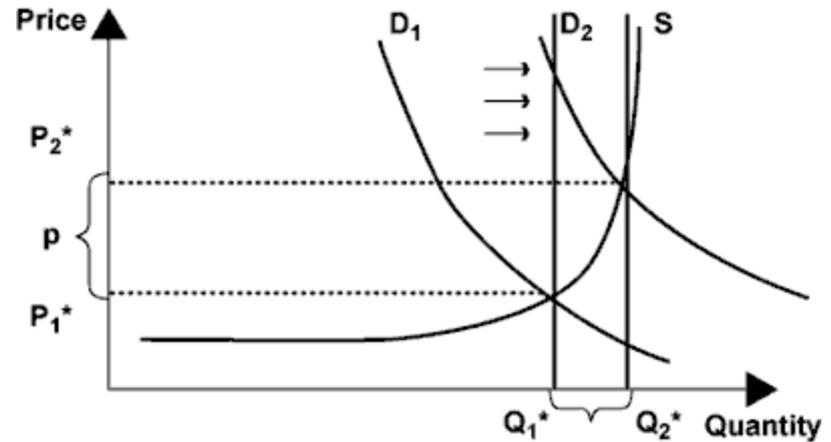
2004-2008



Price Responsive Loads Can Reduce Price Spikes



Wholesale markets today serve inelastic (vertical) demands with increasingly expensive generation.



Increasing demand elasticity lowers the cost of meeting loads, reduces frequency of high price spikes, and reduces ability of generators to exert market power.



Load as a Resource - Challenges

What is the best way to convey the price signal to consumers?

- Communication and metering technology
- Market structure and programs designs

How will consumers respond?

- Control and end-use technologies
- Behavioral/operational motivations/actions

What is the impact on systems operations and reliability?

- Spin, non-spin, replacement, supplemental energy
- What is the price elasticity of demand?

What is needed to enable greater response?



Presentations

New York ISO 2002 Demand Response Programs: Evaluation Results –
Chuck Goldman, LBNL

Value of Demand Responsive Load – Chuck Goldman, LBNL

Technical Assistance to the New England Demand Response Initiative
(NEDRI) – Chuck Goldman, LBNL

Spinning Reserve from Load – John Kueck, ORNL

Ancillary Services From Aggregations of Small Responsive Loads –
Brendan Kirby, ORNL

