



# Demand Response in California: When Wholesale Met Retail



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## Demand Response Today: Rapid Growth

- **Top of the loading order**
- **Sizable utility portfolios**
  - 2,500 MW in 2010; 3,000 MW in 2011
- **12 million advanced meters to be deployed by 2012**
- **Default dynamic pricing for commercial & industrial**
- **Diverse portfolio of demand response resources:**
  - Price-based & emergency
  - Day-ahead & real-time triggers
  - Residential, commercial & industrial
  - Contracts with Demand Response Providers & utility-run programs





## **Demand Response Today: Limited Impact on Wholesale Markets**

- **Not dispatched through the ISO's market operations**
- **Does not set market clearing prices**
- **Market efficiencies derived from demand response have not been fully attained**
- **Demand Response Providers are limited to operate through utility programs and contracts**





## **Demand Response Tomorrow: Fully Integrated into Wholesale Markets**

- **Price-responsive demand and Demand Response resources setting prices in ISO markets**
  - Widespread dynamic pricing
  - Nodal demand
- **Multiple providers of demand response**
- **The CAISO's new Proxy Demand Response product is a first step**





## What is a Proxy Demand Resource (PDR)?

- **Designed to translate retail demand response programs into a wholesale product**
- **Modeled & acts like a generator in the CAISO market**
- **Performance of PDR is determined through application of a baseline**
- **PDR may participate in the CAISO's Day-Ahead, Real-Time, and Non-Spinning Reserve markets**
- **Scheduled independent of the load-serving entity**
- **Enables Demand Response Providers to develop new demand resources and bid those resources directly in the CAISO markets**





## Benefits of Proxy Demand Response

- **Allows existing retail demand response programs to participate in CAISO markets**
- **Can compete with supply-side resources in the CAISO markets**
- **Can set the locational marginal price, and in so doing, help exercise market power, resolve congestion, and help enhance the efficiency of the wholesale market.**
- **Enables Demand Response Providers to bid demand resources directly in CAISO markets**
- **Simplifies the forecasting and scheduling requirements for load-serving entities that want to offer demand response resources**





## Next Steps & Challenges

- **CPUC reviewing whether state laws, regulation, or rules are barriers to third party Demand Response Providers participation in ISO markets (11/9/09 Ruling)**
- **Inefficiencies of pay-for-performance demand response**
  - Baselines
  - Locational arbitrage
- **Competition between dynamic pricing and pay-for-performance demand response**

