



CALIFORNIA ISO

California Independent
System Operator

Use of Residual Demand Model in Assessing Market Competitiveness.

Market Surveillance Committee Meeting

July 7, 2005

Prepared By

Keith Casey



Problem Statement

- The ISO has proposed to transition the Bid Price Cap for energy from \$250/MWh on Day One to \$1,000/MWh.
 - Periodic increases in Bid Price Cap will be \$250/MWh.
 - CAISO will perform annual assessment of market conditions and base recommendation on results.
 - Assessment based on: competition in spot energy market, hedging by LSEs, and availability of demand response.
- **Can Residual Demand Model combine all three criteria and produce results that can be used as the basis for recommendation to increase the Bid Price Cap?**



Requested MSC Action

- Request that the MSC consider and comment on the following:
 - Incorporating LSE hedging and demand response in the model,
 - Selecting an appropriate economic model to apply to supplier(s) facing the residual demand curve.
 - Interpreting model results and setting thresholds for determining competitiveness.



Options

- The Residual Demand Model:
 - Considers single supplier's ability to increase price through withholding.
 - Clear all other supplier's bids against load, where the remaining load comprises the Residual Demand Curve faced by the single supplier.
 - Apply economic model of imperfect competition to remaining supplier and residual demand.
 - Compare simulated outcome to competitive market outcome (price = variable cost).



Options (2)

- **Incorporating LSE Forward Contracts**
 - Consider only fixed price contracts.
 - Use only unit-specific contracts that are known to extend into the next year (period of study)?
 - Net contract quantity from supplier's portfolio and from total demand (clear w/ \$0 bid price)?
- **Incorporating Demand Response**
 - How are Demand Response programs represented in the demand curve?



Options (3)

- Assessing DA and RT markets separately
 - In DA, use bid in load and bid in supply with no Demand Response. Use forecast load and total supply?
 - In RT, use forecast imbalance load and incorporate Demand Response.
 - Consider only one (combined DA and RT) market?
- Appropriate economic model to apply
 - Single residual supplier or multiple residual suppliers?
 - Monopoly model or Cournot model?
- Interpreting results in context of raising Bid Price Cap.