Market Surveillance Committee (MSC) Activities

By

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Current Major MSC Activities

- Market Redesign and Technology Upgrade (MRTU)
  - Managing market power in short-term markets
  - Local market power mitigation (LMPM) mechanism
  - System-wide Automatic Mitigation Procedure (AMP)
  - Factors determining level of bid caps
- Resource Adequacy
  - Capacity Adequacy versus Contract Adequacy
- Intertie Bid Settlement
  - Interim and long-term solution

MRTU (1)

- Market power mitigation in short-term energy markets
  - System-wide versus local market power
- System-wide market power in short-term markets—day-ahead and real-time markets--best managed through forward contracts
  - Purchase contract far enough in advance of delivery to maximize number of potential competitors for product
  - Suppliers committed under fixed-price forward contracts have limited incentive to raise prices in short-term markets
  - Long-term contracts provide the stable revenue stream necessary to finance new generation investment and assure revenue adequacy
- Sufficient generation capacity to serve demand controlled by firms with limited forward contract commitments can create significant system-wide market power problems
    - June 2000 to June 2001 in California

MRTU (2)

- Local market power problem
  - New entry is prohibitively costly at certain locations in California ISO control area
    - Forward purchases far advance of delivery (greater than two years to 18 months) cannot be used to limit spot market power
  - Expected spot market power contained in forward contract prices
    - Threat of new entry at these locations is not credible
- Conclusion—Focus on obtaining stringent local market power mitigation (LMPM) mechanism from Federal Energy Regulatory Commission (FERC)

MRTU (3)

- LMPM mechanism should have
  - Prospective process for determining whether a supplier possesses local market power worthy of mitigation
    - All internal units should be subject to LMPM mechanism
- Mitigated bid should be best estimate of least-cost variable cost of supplying energy from that unit
- Do not include adders in mitigated bids
  - Creates inefficient locational price signals
  - Creates incentive for generation units to be mitigated
  - Experience in PJM market with bid adders for frequently mitigated units
  - Creates leveraging problems
    - Similar to RMR Contract A problem from start of market
    - All suppliers want mitigated unit with bid adder to set market price

MRTU (4)

- Automated Mitigation Procedure (AMP) designed to control system-wide market power
  - At current level of bid cap in California AMP has limited value
  - Very likely to do more harm than good for consumers
- AMP makes it costly for a market participant to bid low
  - A low bid that is accepted reduces the reference level relative to which bids are evaluated for a violation of the conduct threshold
  - AMP may limit frequency of very high prices
    - At the cost of higher prices in the vast majority of hours of the year
    - Net effect may be to increase average spot prices
- Forward contracting for energy in advance is a superior strategy for limiting ability of suppliers to raise spot prices

MRTU (5)

- Setting levels of bid caps on energy and ancillary services markets
  - Trade off between the amount of energy and ancillary services purchased in the short-term markets and the level of bid caps
  - Smaller volume of energy traded on the short-term markets allows a lower bid cap on the short-term markets to be enforced
    - Higher levels of forward contracting imply that it is less likely that one supplier will be pivotal in spot market
  - A pivotal supplier is needed to serve demand regardless of the actions of all other suppliers
    - If ISO operators want to serve demand, they must accept bids from this supplier, regardless of the level of the bid
    - Difficult to enforce bid cap under these circumstances
      - ISO operators have choice of turning lights off or violating bid cap

MRTU (6)

- Impact of fixed-price forward contracting on the level of demand that a supplier becomes pivotal
  - Four firms each of which owns 100 MW and one firm that owns 500 MW.
  - With no forward contracting, if demand is above 400 MWh then large firm is pivotal
    - Largest firm must supply MWhs or demand will not be met
  - If each firm has forward contracts for energy equal to 80 percent of their capacity, then no firm is pivotal until demand is above 800 MWh
    - Largest firm has a 400 MWh fixed-price forward contract, so it has no incentive to raise spot price until it produces more than 400 MWh or total demand is more than 800 MW

MRTU (7)

- Benefits from raising bid cap with significant forward contracting
  - Encourages suppliers to maintain facilities
    - Forced outages more costly
  - Encourages imports to California rather than to other parts of the WECC
  - Encourages loads to become actively involved in spot market
    - If they are exposed to spot price risk

MRTU (8)

- Unless California Public Utilities Commission (CPUC) exposes consumers to real-time price risk, raising bid caps will have limited benefits
  - If California loads continue to forward contract for energy at existing levels
- Current levels of forward contracting limits ability of LSEs to take advantage of low short-term market prices
  - Consumers are protected against risk of high short-term prices

MRTU (9)

- CPUC should subject all large customers with hourly meters purchased by State of California to real-time price risk
  - Exposing consumers to real-time price risk does not imply that supplier must pay real-time price
    - Customer can buy a hedge against short-term price risk from retailer or supplier
- Conclusion—Before proceeding with pre-specified process for raising bid caps, ISO should have minimum requirements verified by CPUC on
  - Fraction of load subject to real-time price risk
  - Fraction load covered by forward contracts

MRTU (10)

- Decision to raise bid caps should not be based on assessment of competitiveness of market, because system conditions can charge
  - California market in 1998 and 1999 versus 2000
  - Decision should be based the safeguards in place that
    - Protect against the harmful impact of high short-term prices
      - Guardrails on competitive market approach
    - Limit incentives of supplies to cause high prices

Resource Adequacy (1)

- Installed capacity equal to 115 % to 117% of peak load will not prevent a future California electricity crisis
  - Crisis not caused by too little generation capacity
  - The incentives of suppliers to exercise unilateral market power in spot market are the same with or without a capacity market
- Sufficient fixed-price forward contracts between suppliers and load-serving entities (LSEs) provides a contractual guarantee against a future electricity crisis
  - Buying a large fraction of demand in advance severely limits the ability of suppliers to exercise market power in the short-term markets operated by ISO

Resource Adequacy (2)

- Capacity market paradigm does not address the problem of the financial viability of LSEs
  - Without adequate forward purchases of energy, LSEs face a significant risk of high short-term prices for a sufficiently long period of time to bankrupt them
- Adequate installed capacity to meet demand peaks cannot prevent energy shortfalls
  - Energy shortfalls more of a concern in hydro-based and import-dependent system such as California
  - All market meltdowns around the world have occurred in hydro-based systems with inadequate fixed-price forward contracting
    - New Zealand, Brazil, Chile
    - Higher levels of forward contracting and active demand-side participation needed in hydro-based systems

Resource Adequacy (3)

- Resource adequacy process should provide strong incentives for suppliers to provide energy at least cost to locations where it is withdrawn from transmission network
- All markets operate best when suppliers have a strong financial incentive to provide services that consumers demand
  - Consumers want a reliable supply of electricity
  - Buying good sufficiently far in advance to insure least-cost provision is best way to ensure a reliable supply

Resource Adequacy (4)

- Resource adequacy in other markets
  - Health care—Buy health insurance, don't make capacity payments to hospitals
  - Air travel—Buy ticket in advance, don't pay for airline to own airplanes
  - Hotels—Buy or reserve room in advance—don't pay for hotels to be available
- ISO operators have valid concern that capacity must be at locations where it can be delivered to load
  - Financial incentive problem
    - If cost of failing to deliver energy to where it can be withdrawn from network is sufficiently high, supplier will ensure power can be delivered
  - Additional benefits of locational marginal pricing (LMP) market
    - Can specify delivery points precisely

Resource Adequacy (5)

- Conclusion—Resource adequacy process should focus on providing suppliers with the financial incentives to meet California load under all system conditions
  - Energy purchased in advance for delivery at locations where it is consumed
- LMP market with forward contracts "delivering" to locations where consumers withdraw energy from network provides very strong incentives for this to occur
  - Suppliers that locate where not all of their energy can be "delivered" receive a very low price for the energy injected at their location
  - Suppliers must then pay very high congestion charges to deliver it to locations where it is consumed

Incorporating Interties (1)

- Real-time market treats internal resources different from interties
  - Internal resources must to respond to 5-minute dispatch instructions
    - Liable for imbalance penalties or uninstructed deviation penalties if fail to respond
  - Intertie bids do not need to respond 5-minute dispatch instructions
    - Committed for entire hour at start of settlement hour
    - Previously guaranteed bid or better for entire hour

Incorporating Interties (2)

- Problem created by lower quality product (in terms responsiveness) guaranteed a higher price than a higher quality product (internal resources) in the real-time market
- Interim solution pays interties as-bid
  - Eliminates financial incentive for Scheduling Coordinators (SCs) to submit DEC bids above their INC bids at the interties

Incorporating Interties (3)

- California is increasingly import dependent
  - 2004 Annual Report on Market Issues and Performance
  - Two possible reasons
    - Cheaper to build and operate facilities outside of California
    - More favorable treatment of external versus internal resources in ISO's real-time market

Incorporating Interties (4)

- Two solutions to intertie bidding problem that treat internal and external resources symmetrically
  - Option 1--Require importers to dynamically schedule, face imbalance charges within the hour, and set market-clearing price, same as internal resources
    - Create hour-ahead market that buys hourly blocks of energy from internal and external resources
  - Option 2—Run hourly ex post real-time market
    - Pre-dispatch imports at intertie and dispatch interval resource within the hour
    - Set ex post price for hour based on actual energy provided in hour using hourly bid curve of each market participant (importers and internal resources)
    - Resources not within 5% of where ISO's instructs them to be are price-takers

Incorporating Interties (5)

- Treating imports and internal resources differently also has reliability consequences
  - Creates incentives for suppliers to take actions that convert more of the energy they produce into the type they expect to be paid the higher price

Incorporating Interties (6)

- Making importers responsible for the imbalance charges within the hour creates additional value for internal resources
  - Internal units can sell insurance against price fluctuations within the hour to importers unable to respond to 5-minute dispatch instructions
    - Internal suppliers have physical resources to manage this risk
  - Internal suppliers now have a financial incentive to limit price variation within the hour because of selling this service to importers
    - Limits need for Regulation and other ancillary services to manage energy imbalances within the hour
    - Has potential to increase overall grid reliability

Questions?