



Market Surveillance Committee Activities—December 2004

By

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Market Power Mitigation Opinion

- Authority from Federal Energy Regulatory Commission (FERC) to implement an effective local market power mitigation (LMPM) mechanism is major motivation for CAISO market redesign
- California currently has the least stringent local market power mitigation mechanism of all markets currently operating in US
- Effective LMPM mechanism key component of a successful market design
 - PJM Local Market Power Mitigation (LMPM) mechanism is most stringent of those currently in place in US
 - Major reason for “superior performance” of PJM market
- LMPM mechanism must be integrated into energy and ancillary services market design
 - Significant risk of “unintended adverse consequences” from choosing LMPM without regard to how it best fits with market design



Market Power Mitigation Opinion

- In several recent decisions, FERC ordered changes to Residual Unit Commitment (RUC) process that substantially enhances ability of suppliers to raise RUC prices
 - Eliminates must-offer obligation on suppliers
 - Requires market-clearing prices for RUC capacity, not pay as-bid prices
 - Requires that suppliers keep RUC payment if dispatched for energy
- MSC believes that rather than run a separate RUC process, reliability constraints should be built into day-ahead market
 - Day-ahead market should be a reliability market not a financial market
 - Day-ahead market should yield best estimate of real-time system conditions as of day-ahead time horizon
- ISO's proposed day-ahead market design is a financial market
 - Allows major load-serving entities to submit "incredible" price-responsive demand bids
 - RUC process is then used to impose reliability constraints given schedules resulting from running day-ahead financial market



Market Power Mitigation Opinion

- MSC advocates integrating RUC constraints into day-ahead energy and ancillary services markets
 - Many reliability problems require more than hour-ahead time horizon to solve them in a least-cost manner
 - Rather than allow encourage “incredible” price responsive demand bids, deal with local market power of suppliers in day-ahead energy and ancillary services process through an effective LMPM mechanism
- ISO should procure ancillary services and energy in locations and quantities that it needs to operate system reliably in day-ahead market
 - If ISO operators need more ancillary services than Western Electricity Coordinating Council (WECC) minimums, they should purchase these amounts rather than use must-offer waiver denial process
 - Must-offer waiver denial process causes some suppliers to be paid for reserves, others are only paid minimum load commitment costs (MLCC)
 - By purchasing ancillary services and energy in day-ahead market in manner that reflects its locational needs, ISO can eliminate need for a RUC process



Market Power Mitigation Opinion

- Simultaneous integration of energy and ancillary services procurement process with LMPM mechanism to ensure consumers are not subject to unacceptable levels of local market power
 - Should yield lower overall energy costs to consumers and most reliable network than financial day-ahead energy and ancillary services markets followed by RUC market that procures to meet ISO's reliability constraints
- Major lesson from June 2000 to June 2001 is that day-ahead market should be a reliability market, not a financial market
 - Day-ahead, hour-ahead and real-time market should incorporate the ISO's best estimate of all relevant real-time operating constraints
 - Suppliers and load-serving entities (LSEs) have all time horizons longer than day-ahead horizon for financial transactions
- If day-ahead, hour-ahead, and real-time markets reflect all relevant operating constraints then there is a less need for virtual bidding
- No need to invest in software and other administrative costs to develop and operate RUC market



Automatic Mitigation Procedures (AMP)

- System-wide automatic mitigation procedure (AMP) not worth potential market inefficiencies they creates in California
 - California is import-dependent and AMP mechanism not well-suited to imports
 - All proposals to implement AMP for imports discourages imports when California needs them most, which could create severe reliability problems
 - AMP mechanism sanctions the exercise of significant amounts market power without mitigation
 - If it doesn't violate conduct or impact thresholds, supplier escapes mitigation
 - AMP mechanism with accepted-bid reference levels may reduce volatility of prices but raise average prices
 - Accepted low-priced bids can reduce reference level, which makes it costly for a supplier to bid low during "competitive conditions"
- Hand system-wide market power problem through forward market procurement process
 - California Public Utilities Commission (CPUC) procurement process that relies on a contract adequacy (rather than generation adequacy) approach to energy procurement limits incentives for suppliers to exercise system-wide market power in the short-term energy and ancillary services markets



Contract Adequacy not Generation Adequacy

- Seller of 500 MWh **fixed-price** forward contract is net buyer of electricity until it purchases 500 MWh from spot market or produces 500 MWh from its own generation units
 - Seller of forward contract only earns spot price on production in excess of contract quantity
 - Reduces incentive for supplier to bid to raise spot market price
 - Knowledge that other suppliers have forward contract obligations implies more aggressive spot market bidding by all suppliers
 - Greater concern about being under-bid by competitors
 - Contract adequacy limits exposure of LSEs to spot prices
- Contract adequacy implies buying forward financial commitments that clear against spot prices at locations where LSE withdraws energy from the network
 - All market participants (suppliers and LSEs) have a strong incentive to find least-cost energy and ancillary services mix from short-term markets
- Strong empirical relationship between level and volatility of spot prices and amount of forward contracting
 - Australian experience of early 2001



Local AMP

Local AMP falls prey to the same problems as system-wide AMP

- Local AMP has lower thresholds for conduct, \$10/MWh or 20 percent of default energy bid, but opportunities to exercise local market power are far more frequent
- Cost-based default bids is a step in positive direction, but allowing a 10 percent adder unnecessarily distorts dispatch and locational prices
 - If all other suppliers bidding their minimum variable cost and this supplier's bid has a 10 percent adder other units will be overused relative to mitigated unit
- MSC recommends that cost-based default bid should be computed based on information that supplier cannot impact through its own decisions
 - Natural gas price = Henry Hub natural gas price plus transportation charge
 - Variable O&M costs from similar units in and outside of California
- Computing default bid in this manner provides strong incentives for suppliers to reduce their variable costs
 - Removes incentives to increase costs similar to those provided by "soft price cap" during January to June 2001 time period
 - Any additional cost recovery for mitigated units should be provided through fixed payments that do not distort LMPs and therefore the dispatch of units throughout the control area



Contract Adequacy on Local Market Power

- Contract adequacy approach typically does not limit local market power of suppliers
 - The lack of effective competition to serve load at a given location in the network occurs at virtually all time horizons to delivery
 - Very difficult to predict in advance when and how much local market power a supplier will possess and for how long
 - Depends on level of local demand, configuration of transmission network, operating behavior of other suppliers, extent to which consumers respond to real-time wholesale prices
- Supplier located in downtown San Francisco can raise prices substantially at all virtually time horizons to delivery and still not trigger new entry of generation
 - Contestability of market for new generation capacity at system-wide level which implies that buying forward is an effective way to limit system-wide spot market power does not work
- Supplier located in a region served by a transmission line that is out for a sustained period of time can exercise a substantial amount of local market power before the line is repaired and sufficient competition at that location exists
- A prospective LMPM mechanism that pre-commits to mitigate the bids of a supplier under all conditions that it is deemed to possess substantial local market power is necessary to solve these problems
 - If the system conditions when a supplier is deemed to possess substantial local market power are clearly defined, then both suppliers and LSEs can estimate the opportunity cost of the supplier signing a forward contract (i.e., selling into the spot market)
 - Forward contractual arrangements between local generation and LSEs that do not reflect the expected exercise of local market power can then be signed with effective LMPM mechanism in place
 - Absent an effective LMPM mechanism all forward contracts an LSE might sign require consumers to “pay for local market power on the installment plan”



Designing a LMPM Mechanism

- LMPM mechanism should apply to energy and ancillary services
 - Focus replicating competitive market outcomes when there is insufficient competition to rely on market mechanism
- Default bids should estimate a competitive bid
 - Separate revenue adequacy for unit from desire for efficient pricing and dispatch of generation units
 - Default bids higher than minimum variable cost of supply sanctions exercise of market power by unit owner
- LMPM mechanism should contain three components
 - Determining system conditions when a supplier possesses significant local market power
 - Don't require supplier to exercise significant market power to be mitigated as is the case with AMP
 - Determining how supplier is paid when it is mitigated
 - Can pay supplier more than LMP at unit's location, but don't distort LMPs and dispatch of generation to do it
 - How market prices are computed accounting for mitigation process



Design of LMPM Mechanism

- A number possible approaches to determining when a supplier possesses substantial local market power
- Approach used in PJM requires making distinction between competitive and non-competitive network constraints to determine which units to mitigate
 - Two passes in dispatch process to determine LMPs
 - First pass determines which units are mitigated based on those taken to resolve non-competitive constraints
 - Second pass determines LMPs with cost-based default energy bids for mitigated units
- All units with substantial local market power should be mitigated
 - Several ways to do accomplish this
 - Default energy bids based on cost estimates outside of unit owner's control
 - Unit owner required to be price-taker for needed quantity of energy
- Run market pricing mechanism with mitigated bids in place of actual bids to set LMPs
- Proposed LMPM mechanism uses RMR units and non-RMR units
 - Unclear why RMR contracts needed if all units subject to LMPM
 - Two types of units—Suppliers elect status on yearly basis
 - Cost-based units guaranteed full cost recovery with default bid at variable cost
 - Market-based units subject to LMPM mechanism but no make whole payment
 - Electing to be cost-based has risk that if ISO does not need unit for reliability reasons, it must be retired or auctioned off



LMPM Mechanism

- LMPM mechanism should be integrated with overall market design
- Offering FERC list of options to choose from increases risk of “unintended adverse consequences”
- Without an stringent LMPM mechanism integrated into overall market design, California is unlikely to realize significant benefits from adoption of LMP market, even if seller’s choice contract problem is solved
- Integration of reliability must-run unit designations process with LMPM mechanism has potential for significant savings to California consumers



Other MSC Activities

- Preparing opinion on design of resource adequacy process in California market
 - Problems with capacity markets and capacity payments in other markets
 - Alternative mechanisms for ensuring California load is met at least cost to consumers
 - Mechanisms for fostering symmetric treatment of load and generation in California market