



Linkages Between Parameter Tuning and Scarcity Pricing

Frank A. Wolak
Chair, Market Surveillance Committee (MSC)

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Common Features of Scarcity Pricing and Parameter Tuning

- Scarcity pricing occurs when there are insufficient bids and offers to clear the ancillary services and energy markets
 - An administratively determined curves is used to reduce energy and ancillary services purchases
 - Prices rise above offer caps when there are scarcity conditions
- Parameter tuning places explicit price on violating scheduling priorities, transmission network rights and capacities, and energy and ancillary services demands
 - An administratively set price above offer cap allows violations of these constraints
 - Market prices rise above offer cap in scheduling run

Common Features of Scarcity Pricing and Parameter Tuning

- Scarcity pricing mechanism will not be invoked if there are sufficient price-sensitive bids and offers into ISO markets
- Values of penalty prices in both scheduling and pricing runs will not impact market prices if there are sufficient price-sensitive bids and offers into ISO markets
- Conclusion--Parameter tuning is necessary for ISO to solve for market-clearing prices regardless of bids and offers submitted, self-schedules, ETCs, TORs and transmission network configuration

Linkages Between Scarcity Pricing and Parameter Tuning

- Parameter tuning process uses scheduling and pricing runs
 - Scheduling runs sets very high penalty prices to preserve scheduling priorities between self-schedules, existing transmission rights (ETCs) and transmission ownership rights (TORs)
- Prices that result from scheduling run can be much larger or smaller than ISO offer caps and floors if any scheduling priorities are violated
- Prices in scheduling run can also exceed offer cap if energy or ancillary demand is not meet
 - Prices reflect scarcity conditions

Linkages Between Scarcity Pricing and Parameter Tuning

- A single combination scheduling and pricing with run penalty parameters above offer cap and below offer floor is effectively the same as implementing scarcity pricing
 - Could set prices substantially in excess of offer caps and below offer floors
- Parameter tuning and scarcity pricing differ primarily because constraint set and penalty prices are adjusted for pricing run
 - Results of scheduling run used to adjust self-schedules, ETCs, TOR or demand levels that enter pricing run
 - Penalty prices are significantly reduced relative to scheduling run values in pricing run

Linkages Between Scarcity Pricing and Parameter Tuning

- Reducing penalty prices and relaxing constraints between scheduling and pricing runs mutes cost of honoring scheduling priorities
 - Actual constraint violation based on large penalty parameter which would imply large (in absolute value) market prices
- If pricing run penalty parameters were used in scheduling run, significantly larger self-schedule, ETC, or TOR adjustments would occur
 - Lower market prices consistent with larger adjustment

Linkages Between Scarcity Pricing and Parameter Tuning

- Parameter tuning and scarcity pricing must balance two competing goals
 - Send price signals to represent true cost of honoring self-schedules, ETCs, TORs and demand requirements
 - Protect consumers from unjust and unreasonable prices
- Scarcity pricing and violations of constraints in scheduling and pricing runs can occur because suppliers exercise unilateral market power
 - Must design scarcity pricing mechanism and parameter tuning process to limit opportunities for suppliers to cause high prices through their unilateral profit-maximizing actions

Distinguishing True from Artificial Scarcity

- Cost of an administrative procedure based on system conditions to set “scarcity prices”
 - Suppliers take actions to cause these system conditions to occur
 - Regulator-sanctioned form of exercising unilateral market power
- Properly designed scarcity pricing mechanism should limit opportunities for suppliers to exercise unilateral market power in short-term market
 - Use actual demand-side of market to set scarcity prices not an administrative procedure that can be manipulated by suppliers

Linkages Between Scarcity Pricing and Parameter Tuning

- Success of scarcity pricing and parameter tuning requires final demand to become an active participant in wholesale market
 - California load-serving entities must eliminate administrative demand-response programs and replace them with economic demand response programs
 - Loads reduce their consumption in response to price signals
 - Price signal does not need to be real-time price, but it should be related to real-time system conditions
 - Critical peak pricing (CPP) with rebate (CCP-R) program shares risk of demand response between final consumer and retailer
 - CPP or CCP-R should be default rate for all California consumers with interval meters

Linkages Between Scarcity Pricing and Parameter Tuning

- High levels of fixed-price forward contract coverage of final demand for energy and ancillary services in a physically feasible manner
 - Limits potential harm associated with scarcity pricing and parameter tuning
- Both high levels of fixed price forward contract coverage of final demand, with remaining discretionary demand, facing prices correlated with real-time system conditions
 - Limits extent to which both administrative scarcity pricing and administrative adjustment due to penalty parameters will be necessary

Scarcity Pricing Under MRTU

- The CPUC and ISO should mandate that all load-serving entities submit non-spinning reserve ancillary services load bids at or below bid cap equal to at least 10 percent of day-ahead energy schedule
 - Bids for real-time energy must be at or below bid cap on real-time energy market
- This builds in feasible amount of demand response into both ancillary services and real-time energy market
 - Eliminates need to rely on administrative mechanism to set scarcity prices
 - Demand bids will set high energy prices and load will be curtailed in real-time market based on willingness to curtail of loads
 - Scarcity pricing will function in a very similar manner to how it functions in all other markets
 - Willingness to pay of final consumers determines price at which available supply equals amount demanded at that price

Questions/Comments?

Scarcity Pricing in Other Markets

- Downward-sloping demand curve allocates a fixed supply
 - Airlines charge extremely high prices for tickets as flight begins to fill up
 - Tickets to sold-out events sell for more than list price

