



California ISO
Your Link to Power

Decision on Convergence Bidding Design

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Convergence bids are financial bids submitted in the day-ahead market to buy or sell energy.

These bids provide:

- Opportunity to arbitrage the difference between day-ahead and real-time prices
- Hedging mechanism for physical generators

Convergence bidding operates successfully in all the other US Independent System Operator markets.

Example 1 - Arbitrage difference in market prices at a location using virtual supply

Day-Ahead Market

- LMP = \$20
- Virtual supply bid clears for 100 MW at \$20
- Settles at $100 \text{ MW} * \$20 = \$2,000$

Real-Time Market

- LMP = \$15
- Virtual supply liquidated in opposite position at \$15
- Settles at $100 \text{ MW} * \$15 = \$-(1500)$

Net Position = \$500 credit

Example 2 – Generator hedges against potential outage and high real-time prices

Day-Ahead Market

- LMP = \$15
- Schedule for 200 MW
- Clears 100 MW Virtual Demand Bid at \$15
- Generator settles 200 MW * \$15 = \$ 3,000
- Virtual demand settles 100 MW * \$15 = \$ -(1500)

Real-Time Market

- LMP = \$ 20
- Produces 100 MW
- Virtual demand bid liquidated in opposite position at \$20
- Generator settles at 100 MW * \$20 = - (2,000)
- Virtual demand settles 100 MW * \$20 = \$2,000

Net Position = \$1500 credit

Nodal convergence bidding provides important benefits.

- Lowers costs due to more efficient day-ahead commitment
- Improves grid operations
- Minimizes differences between day-ahead and real-time prices
- Mitigates supplier market power
- Provides suppliers the ability to hedge against generator outages

Management proposes the following design elements for convergence bidding:

- Bidding allowed at pricing nodes, default load aggregation points, interties and trading hubs
- Allocation of certain market costs to convergence bids
 - Uplift costs
 - Grid management charges
 - Transaction fees
- Registration and credit requirements

Proposal includes sufficient safeguards to address concerns raised by nodal convergence bidding.

Concerns	Safeguards
Market manipulation	<ul style="list-style-type: none">•Position limits•CRR settlement rule•Ability to suspend bidding
Undermining established mitigation measures	<ul style="list-style-type: none">•Position limits•Physical LMPM process
Payment default	<ul style="list-style-type: none">•Dynamic credit check

Obtains objective of mitigating concerns without compromising functionality .

Corollary issues raised in stakeholder process can be addressed through subsequent stakeholder processes

- Requirements to distinguish between physical and financial intertie bids
 - Tagging requirements for interties
 - Determine beneficial information for more efficient market activity
 - Information release policy
- Residual unit commitment market enhancements
- Future enhancements to local market power mitigation

Management requests approval of the proposal.

- Key feature of a locational marginal price market
- Mitigates concerns through safeguards without compromising functionality
- Addresses FERC requirements

Deployment tentatively targeted for February 2011