

Making Convergence Bidding Benefit Market Performance

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Goals of Convergence Bidding (CB)

- **Limit magnitude of deviations between day-ahead and real-time prices**
 - Expected Value of $P(\text{RT})$ equals $P(\text{DA})$
 - Suppliers will schedule generation units in least cost manner because they expect to receive same price from DA and RT markets
 - Reduce variance in $(P(\text{DA}) - P(\text{RT}))$
- **Limit ability of market participants to move market prices through unilateral actions**
 - Many convergence DEC and INC bids around market clearing price makes it more difficult any individual bidder to move market prices

Collateral Requirements and CB

- **Setting collateral requirements for CB**
 - As a general rule if a buying 1 MW of virtual load or selling 1 MW of virtual generation costs \$1/MWh then market participant will not submit a convergence bid unless expect difference between day-ahead and real-time prices exceeds \$1/MWh
 - Setting collateral requirements can increase expense of submitting CB
 - Reduces likelihood of achieving both goals of CB
 - Collateral requirements have been suggested as a way to limit local market power exercised using CBs

Position Limits for Market Power Mitigation

- **Position limits on total CBs and CBs at each node superior approach to collateral requirements to limiting local market power**
 - Small CBs from many market participant desirable
 - Large CB from single market participant undesirable
- **Position limits to prevent undesirable outcomes**
 - ISO sets maximum on total MW of CBs for each hour
 - ISO sets maximum on total MW of CBs at each node for each hour
- **Collateral requirements for convergence bidders set purely to manage financial risk of CBs**
 - Need not be very large
 - Should not be very large to achieve goals of CB

Cost Allocation for CB

- **Symmetry in cost allocation to physical and virtual load is a useful principle subject following caveats**
- **Allocating DA and RT market uplift costs and residual unit commitment (RUC) costs to convergence bidders can run counter to CB goals**
 - Larger transactions costs of CB, less CB will occur and less likely price convergence occurs
- **CB, particularly at nodal level, can reduce uplift and RUC costs**
 - Submit DEC CB to ensure unit dispatched in DA market which reduces need for RUC

Cost Allocation for CB

- **Allocating ancillary services costs to virtual load**
 - DEC CBs can reduce need to purchase AS
 - Increases transactions costs of CB
 - INC CBs can increase need to purchase AS
- **Overall cost allocation conclusion--Keeping transactions costs of CB as low as possible consistent with achieving goals of CB**
 - Argument for introducing asymmetric treatment of physical and virtual transactions