



DMM Comments and Recommendations on Convergence Bidding Design Options

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Presentation Outline

- **Benchmarking (PJM, NYISO, ISO-NE)**
 - Market design rules
 - Mitigation measures
 - Monitoring tools
- **DMM Recommendations on Key Design Issues**
 - Spatial Granularity
 - Load Distribution Factors
 - Market Power Mitigation Measures
 - Monitoring Tools
- **Conclusion**

Benchmarking

■ Market Design Issues

- Spatial Granularity
- Flagging of convergence bids
- Limits of Convergence Bid Volumes/Segments
- Treatment of Uninstructed Deviation and Forced Outages

■ Mitigation Measures

- CRR settlement rules
- Ability to limit or suspend trading

■ Monitoring Tools

- Ability to run the DA market without virtual trades
- Ability to Track Convergence Bidding Profits and Losses
- Ability to Simulate Impact of Convergence Bids on Prices
- Ability to Assess Impact of Market Behavior on a Participant's Total Portfolio



Benchmarking — Summary Matrix

	NYISO	PJM	ISO-NE
Spatial Granularity	Zonal (15 zones)	Nodal	Nodal
Flagging of Convergence Bids	Yes	Yes	No
Congestion Revenue Rights	Monitor using Re-Runs of the DA Market	Automated Settlement Rule	Settlement Rule (May not be Automated)
Bid Segments	VB in Whole MWh Only	(unable to determine)	None
Collateral & Charges	Collateral \$200/MWh	(unable to determine)	Small Charge per Convergence Bid
Ability to Limit or Suspend VB	Yes – Unused “Circuit Breaker” Provision	No	Yes – Limit or Suspend < 6 months
Ability to Re-Run DA Market	SCUC and PROBE	SCUC and PROBE	Estimates Effects of Convergence Bidding on an Annual Basis

Market Power Mitigation and Monitoring Issues

- **Spatial Granularity**
- **Load Distribution Factors**
- **Market Power Mitigation Measures**
- **Monitoring Tools**

Spatial Granularity

- **CAISO proposed three major spatial granularity options**
 1. Convergence supply and demand bids at the LAPs
 2. Convergence supply and demand bids at all PNodes
 3. Convergence demand bids at LAPs and convergence supply bids at generation PNodes
- **DMM recommends Option 1 – rationale based on:**
 - Under-scheduling
 - Mitigating Supplier Market Power
 - Eliminating Implicit Virtual Bids
 - Increase Market Liquidity
 - Hedging Mechanism for Generation Owners
 - Gaming of Congestion Revenue Rights
 - Monitoring and Mitigating of Generation Outages, Deviations, and Other Factors Affecting Real Time LMPs



Load Distribution Factors

- **DMM agrees with the CAISO proposal that Load Distribution Factors (LDFs) used for physical bids should also be used for convergence bids.**

Recommendations on Mitigation Measures

- **Congestion Revenue Rights Settlement Rules**
 - Not necessary under Option 1
- **Position Limits**
 - Should consider having ability to impose
- **Limitation or Suspension of Convergence Bidding**
 - Should have circuit breaker capability
- **Local Market Power Mitigation and Price Caps**
 - CBs should be subject to energy bid caps
 - Consideration of CBs in LMPM needs further study
- **Flagging of Convergence Bids**
 - Need flagging
- **Limitations on Bid Price-Quantity Pairs**
 - Not effective for market power mitigation
 - May be useful for limiting transaction volumes

Required Monitoring Tools

- **Ability to Re-Run the DA Market**
 - Routine, daily counterfactual re-run of the DA Market excluding convergence bids
 - Convergence (or divergence) of DA and RT prices
 - Large or persistent financial losses by individual participant
 - Impacts of each participant's convergence bidding on prices, congestion, and their net profits
- **Ability to re-run settlement outcomes if significant differences in charges exist between convergence and physical bids**

Conclusion

- **Convergence Bidding is an important market design element that can improve market efficiency.**
- **Convergence bidding at a nodal level creates the potential for market manipulation – design needs careful consideration and strong monitoring and mitigation tools.**
- **Better to start with simple design – LAP Convergence Bidding**
 - Captures most of the benefits of convergence bidding
 - Minimizes potential for nodal price manipulation
 - Provides opportunity for further study of the need and proper design of more granular convergence bidding