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

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