CRR Settlement Rule Under Convergence Bidding

Eric Hildebrandt, Ph.D.
Ryan Kurlinski
Department of Market Monitoring

Convergence Bidding Stakeholder Meeting
October 9, 2009
Overview

- Automated CRR “clawback” rule
  - DMM developed variation of PJM approach that DMM believes will be more targeted based on specific flows and congestion prices.
  - DMM solicited input of variations and specific thresholds used with this approach.
  - Response to new approach from MSC and stakeholders generally supportive, although limited feedback received from stakeholders.
  - Revised proposal in October 2 whitepaper includes several modifications suggested by stakeholders.
Key Modifications in Revised Proposal

- Results netted across hours of day covered by CRR
  - Peak CRR = HE 7-22
  - Off-Peak CRR = HE 1-6, 23-24

- For each congested constraint impacted by participant's VB, methodology considers net impact of that constraint on all CRRs held by that participant.

- Virtual bids at LAP or Gen hub level excluded from calculations to provide “safe harbor” for VB at level that would be very difficult to manipulate prices.

- Methodology expanded to apply to “counterflow CRRs”

- Based on Legal review, proposal to apply CRR rule for affiliates dropped
  - Potential use of VB to benefit CRR holdings of affiliate will be monitored and subject to referral to FERC.
Revised Methodology – Step 1

Calculate impact of participant’s portfolio of VB on flows of the congested constraint each hour

\[ F_{DA,k,t,i} = \sum_{j \in \{J\}_{i,t}} S_{DA,k,j,t} V_B j,t,i \]

Where

- \( k \): Constraint; \( j \): Node; \( i \): Participant; \( t \): Hour
- \( S \): Shift factor; \( V_B \): Accepted virtual bids
Revised Methodology – Step 2

Determine hours when participant’s portfolio of VB significantly impacted congestion

\[ \left| F_{DA,k,t,i} \right| > (K \times L) + \left( K - \left| F_{DA,k,t} \right| \right) \]

Where:

- **K**: Constraint’s thermal limit
- **L**: Threshold percentage
- **\( F_{DA,k,t} \)**: Total IFM market flow on constraint
Revised Methodology – Step 3

Compare constraint’s impact on value of participant’s total CRR holdings at DA prices relative to CRR value at real time prices.

- First: one CRR, one hour

\[ d_{k,c,t,i} = Q_{c,t,i} * \left( \Delta_{DA,k,c,t} - \Delta_{RT,k,c,t} \right) \]

Where

- \( Q_{c,t,i} \): MW quantity of CRR owned by participant

\[ \Delta_{DA,k,c,t} = \left( \left( - S_{DA,k,Sink,c,t} \right) \lambda_{DA,k,t} \right) - \left( - S_{DA,k,Source,c,t} \right) \lambda_{DA,k,t} \]
Revised Methodology – Step 3 (Continued)

Compare constraint’s impact on value of participant’s total CRR holdings at DA prices relative to CRR value at real time prices.

- Second: Add up constraint’s impact on all i’s CRRs, all hours

\[
\Gamma_{k,p,i} = \sum_{t \in \{T\}_{k,p,i}} \sum_{c \in \{C\}_{p,i}} d_{k,c,t,i}
\]
Revised Methodology – Step 4

- Apply CRR adjustment on constraint-by-constraint basis

\[ PA_{k,p,i} = \min\left(-\Gamma_{k,p,i}, 0 \right) \]

- Payment adjustment only if constraint net increased day-ahead CRR portfolio value
Should there be a cap on payment adjustments to ISO for “counter-flow” hours?

- Cap on payment adjustment contribution of each CRR each hour

\[
\begin{align*}
\text{if } \Delta_{RT,k,c,t} < 0 & \\
\quad \quad \quad \quad d_{k,c,t,i} = Q_{c,t,i} \times \min(\Delta_{DA,k,c,t} - \Delta_{RT,k,c,t} , M) \\
\text{else} & \\
\quad \quad \quad \quad d_{k,c,t,i} = Q_{c,t,i} \times (\Delta_{DA,k,c,t} - \Delta_{RT,k,c,t})
\end{align*}
\]
Summary

- Revised approach designed to provide effective framework for mitigating concerns about use of VB to manipulate CRRs.
- Settlement rule designed to supplement – rather than replace -- more detailed monitoring/analysis.
- Specific thresholds used can be modified over time if needed to reduce “false negatives” or “false positives”.
- Since use of VB to “game” CRRs would exacerbate price divergence, this behavior could also be addressed by authority for DMM to suspend/limit VB by individual participants on case-by-cases basis (subject to FERC approval past 90 days).
- Behavior could also be referred to FERC under rules prohibiting market manipulation.