Day Ahead Market Parameter Settings: Further Analytic Results for IFM & RUC

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Topics for Discussion

- Modifications to initial values for Integrated Forward Market (IFM)
- Analysis and recommendations for Residual Unit Commitment (RUC)

Limited changes occur in parameters for IFM

- CAISO discussed initial values for IFM in stakeholder meetings on 5/13/08 and 6/13/08, and 7/23/08 whitepaper.
  - Transmission flow constraints form anchor for high priority constraints. Resource that is 10% effective should be selected if bid at cap: $500 / 10% = $5000/MW.
- Additional testing shows values for Market Energy Balance and Intertie Scheduling Transmission Constraint can be reduced from vendor's defaults while maintaining firmness.
  - In other contexts (e.g., RUC), Intertie Scheduling needs highest priority. IFM will use consistent rank order: $7000/MW for both scheduling and pricing runs.
  - Market Energy Balance retains next highest priority: $6500 in scheduling run, $1500 in pricing run.
  - Ancillary service parameters are addressed by Shucheng Liu.

Using these revised parameters, CAISO obtained anticipated results

- Market Energy Balance and Intertie Scheduling Transmission Constraint are not relaxed in IFM.
  - Infeasible constraints for Energy schedules are resolved by self-schedule adjustments and relaxation of other transmission constraints.
- When AS insufficiency occurs, highest economic bid sets ASMP.

Parameters for RUC reflect differences between IFM and RUC

- IFM uses bid-in and self-scheduled Demand, RUC uses forecast and Market Energy Balance constraint.
  - Thus, scheduling run penalty price = $1600. In pricing run, let highest accepted bid set RUC clearing price, so penalty price = $0.
- To minimize negative RUC prices, and recognize that RT conditions may differ, limit transmission constraint penalties.
  - Scheduling run: $2000 for Intertie scheduling, $1250 for others.
  - Pricing run: $250 (equals RUC bid cap).
- Other:
  - Uneconomic bids for Estimated Hour-Ahead self schedules for energy, and IFM energy schedule: $-250 in both scheduling and pricing runs.
  - Penalty prices for minimum on-line capacity, quick-start resource capacity, and minimum load energy: $250 in scheduling, $0 in pricing.

Test Case established to evaluate RUC parameters

- In test case, transmission constraints are same as IFM test.
- RUC bid insufficiency is created by adding 5000 MW to demand forecast used in MPM and IFM, in peak hour of day.
  - RUC forecast adjustment also added to other hours, in decrements of 500 MW per hour away from peak hour.
- Available RUC bid set results from IFM, which uses bid set resulting from MPM.

Test results demonstrate that RUC parameter settings address identified concerns

- Address negative RUC prices: Effect minimized through transmission constraint penalty prices, and uneconomic bid prices for IFM schedules and estimated hour-ahead schedules. Despite negative RUC prices, resources have positive RUC revenues over 24-hour period.
- Address RUC prices substantially exceeding RUC bid cap: Effect minimized through moderation of negative RUC prices, and setting transmission and Market Energy Balance penalty prices.
- Analysis is continuing.