Convergence Bidding Working Group – 10/1/09

Teleconference Information

Dial-in Number: (800) 401-8436

International Dial-in: (612) 332-0418

There is no conference ID number.

Web Conference Information

Web Address: www.webmeeting.att.com

Meeting Number: 511.468.2337

Access Code: 93.41.896

Agenda

TIME	TOPIC	PRESENTER
9:00 – 9:10	Regulatory update	Sidney Davies and Janet Morris
9:10 – 9:30	Proposed solution to mitigate concerns regarding AC power flow under Convergence Bidding	Khaled Abdul-Rahman
9:30 – 10:00	Proposed approach for alleviating bid volume limitations	Li Zhou

Introduction

- This is the third in the series of Convergence Bidding Working Group conference calls focused on technical and implementation challenges
- Future Sessions
  - CAISO welcomes suggestions for future agenda items
  - Participants are encouraged to discuss their internal challenges and present results of their studies and analysis on future sessions

Update on Regulatory Process

- Policy Finalization
  - Final Draft Proposal Posted – October 2
  - Final Policy Call – October 9
  - Board Documents Posted – October 22
  - Board Meeting – October 29-30
- FERC Filings
  - Motion for extension of implementation date – November 13
  - Conceptual design filing – November 13
  - Tariff filing – Late January 2010

AC Power Flow Convergence Testing

- The CAISO has been testing approaches to mitigating concerns related to AC power flow divergence
  - Branch angle divergence due to excessive MW flow on a particular branch or group of branches
  - Voltage divergence due to low voltage magnitude at a bus or group of busses
- A whitepaper describing testing scenarios executed, a summary of the results and key conclusions is posted on the CAISO website at:

  http://www.caiso.com/2437/243786845a9d0ex.html

AC Power Flow Testing – Approach

- CAISO began with a peak-hour save case which converged with AC power flow in all iterations of UC-NA
- Select a “target node” and increase the load at that node until an AC power flow solution cannot be obtained and NA produces a DC power flow solution
- For initial branch angle divergence cases
  - Provide the DC solution to the second UC iteration
  - Force subsequent NA iterations to attempt an AC solution
- For higher MW level voltage divergence cases, either
  - Enforce more constraints around the target node and rerun
  - Enforce nodal MW limits on the target node and rerun

AC Power Flow Testing – Results

- Branch angle divergence was overcome by allowing the first iteration of NA to use DC power flow and requiring subsequent iterations to first attempt AC power flow
- Voltage divergence was overcome by imposing additional constraints around the target node
- Voltage divergence was also overcome by manually imposing a MW limit on the target node after the first power flow solution

AC Power Flow Testing – Analysis

- Using an initial DC power flow solution to provide additional information on constraints to SCUC will typically allow an AC power flow solution to be obtained in the second iteration
- Nodal MW limitations may be imposed if CAISO does not have good observability nor reasonable branch group ratings for the node where excessive injections or withdrawals are occurring
- CAISO will use the DC iteration approach first, but will maintain ability to use both approaches to ensure an AC solution

AC Power Flow Testing – Conclusions

- The ability to directly apply nodal constraints is required regardless of whether nodal or LAP-level Convergence Bidding is implemented
- Reducing nodal bids is more effective than reducing LAP bids since they have an effective factor of one
- Nodal MW constraints will only be enforced if AC power flow cannot be obtained through transmission constraints
- Once the nodal constraint is enforced, it will be included in all subsequent iterations
- The nodal MW constraint, if binding, impacts the LMP

Alleviating Bid Volume Limitations

- In previous discussions, CAISO has discussed the need for a “bid volume” limit
  - The system-wide count of bids / Resource IDs that IFM can process is limited
  - A multi-stage process was proposed to allocate the available bid volume capability across SCs
- CAISO has identified a new approach that would eliminate the need for a bid-volume limit

Alleviating Bid Volume Limitations – Approach

- Step 1 – At 10am, the CAISO will aggregate all supply and demand CBs at a location to create a composite CB supply and composite CB demand curve prior to MPM
- Step 2 – Run MPM/IFM with physical bids and the composite CB supply and demand curves; run RUC with physical bids only
- Step 3 – Following RUC, disaggregate the cleared CB quantities and map them to the submitted bids
- Step 4 – Around 1pm, publish Day-Ahead market results, including individual CB results

Alleviating Bid Volume Limitations – Notes

- This approach guarantees no more than about 7,000 CBs can be submitted (~3,500 nodes * 2 CB types)
- A initial $0.005 per-segment fee will be imposed on submitted CBs
  - Economically limits submitted CBs to “reasonable” levels
  - Revenues from the fee will be credited against the GMC imposed on cleared CB gross MWh
  - Design limits incentives to submit significantly out of the money bid segments without imposing additional net cost on CB
  - CAISO will evaluate magnitude on an on-going basis