

9/14/09

CAISO and Siemens are working on the software design phase of Convergence Bidding. The Technical Challenges paper discussed at the August 19, 2009 Implementation Workshop identifies current software constraints that are in the process of resolution.

<http://www.aiso.com/240a/240a7ace60860.pdf>

The CAISO and Siemens are collaborating on options to resolve each of these technical challenges. The imposition of bid volume limits (i.e. count of bids submitted regardless of MWs) at the transaction level will be required and the CAISO and Siemens are investigating the appropriate threshold. Separately, the CAISO will maintain the ability to limit the MW level at each network location in order to maintain a solution that meets CAISO requirements. Conceptual testing of these requirements is underway to provide proof of design concept and volume sizing parameters. Both of these are distinct from the Position Limits that will be imposed at Go-Live, which the CAISO currently plans to relax over time depending on market outcomes.

Conceptual testing results to date:

1. Data structure changes will be required to the current software design to support the Convergence Bidding functional and performance requirements
2. Bid volume will need to be imposed through SIBR rules (to be defined) as well as MW limits within the market application to maintain the AC power flow solution requirement
3. Portions of the software algorithms may need to be redesigned for computation efficiency purposes
4. Siemens recommends migrating their software platform to 64-bit architecture (currently 32-bit)

Siemens presented an overview of their conceptual testing at the Convergence Bidding Working Group on September 3, 2009. Please refer to the following presentation for more information:

<http://www.aiso.com/241e/241e7858ad90.pdf>

Assumptions:

- Responses reflect the most current information from the updated scenario testing.
- The purpose of this testing is to provide software design validation and not to provide results more typical of market simulation.
- The tests were conducted in a software development environment, where system parameters can be altered to determine stress points.
- The value of this testing is limited in nature and does not replace the planned investment in software testing that follows the design and development phase.
- CAISO and Siemens will limit investment in this testing once the stress points are determined and direct the focus towards implementation.
- CAISO and Siemens jointly assess that this testing may have reached its optimal value and further investment may not be warranted during this phase.

Additionally, the following questions were submitted by PG&E on 8/24/09. Since all Market Participants may be interested in the responses, the CAISO is posting this set of responses to the website.

- (1) Please provide the following bid detail for the 5,000 convergence bids:
 - (a) Bid location
 - (b) Type of bid, demand or supply
 - (c) MW and \$ bid pairs by hour

Bids were cloned from original bids submitted on the trade date such that bids were replicated where there was existing generation and load. To reach 5,000 bids in the virtual LAP bidding scenarios, load bids

were copied at LAPs by replicating the MW volume at 10% of the original amount with variation in bid price. In the nodal bidding scenarios, each LAP was cloned and distributed to the corresponding nodes. The supply bids were cloned based on the physical bids submitted for that trade date.

(2) Did you rerun an actual historic trade day? If so, what day?

A typical summer day was used; June 28, 2009, where load was up to 42,300 MW.

(3) What FNM version did you run?

DB39 was used for the initial test. Further testing was conducted on DB42.

(4) Please provide the DA LDFs by hour.

The LDFs used were the same as used by the market for that trade date.

(5) Please provide the peak demand (MW) and hour for the CAISO and three IOU TACs.

Please refer to OASIS for the trade date of the test for this information.

(6) Please provide the load profile used the three IOU TACs.

Please refer to OASIS for the trade date of the test for this information.

(7) Please provide the total cleared CAISO hydro generation by hour.

If this question is related to the trade date, please refer to OASIS for this information. Otherwise, we see limited value in providing this information since the amount of cleared MW varied with the variation of prices that were used for testing. Please provide further explanation for this request.

(8) Please provide the LMPs for the three default LAPs by hour.

If this question is related to the trade date, please refer to OASIS for this information. Otherwise, we see limited value in providing the LMPs since they are a function of arbitrarily created bid curves used for the conceptual testing.

(9) Please provide the cleared Virtual Demand MWs and Virtual Supply MWs by hour.

If this question is related to the bidding quantities, then the virtual demand MWs were 10% and 20% of bid-in quantity and one of the scenarios used multiple times of the bid-in quantities at the LAP locations. This specific scenario was conducted without running power flow as it was not the focus of this test. Please refer to the presentation (link above) for more information.

(10) Were the convergence bids included in LMPM?

No, only IFM was executed.

(11) Did you make any unusual or "manual" adjustments to the FNM, SCUC settings or the optimization algorithm?

Yes, software sizing and data structural changes were made to accommodate the volume of data involved in these scenarios. This was done for stress testing purposes and does not reflect the actual work required for implementation.

(12) Did you enforce any CB volume limits by total system, node, LAP, Trading Hub, SCID or in any other way?

Yes, different volumes were tested with each scenario. Please refer to the presentation for more information.

(13) Was there any special intervention either through the software or manually to achieve AC convergence?

For the 10% scenario, AC convergence was achieved without intervention. Other scenario results are being evaluated. It is anticipated that software changes will be required for more extensive testing.