

Analysis Track Testing of CAISO MRTU Pricing and Dispatch Final Results

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LECG

OVERVIEW

Analysis track testing and validation of the CAISO day-ahead market, real-time predispach, and real-time dispatch software has been completed.

- 42 cases were subjected to a full analysis, sometimes more than once (21 IFM cases, 17 RTUC cases, 4 RTD cases).
- Elements of more than 20 other cases were analyzed for particular purposes, such as validation of LAP and other Apnode prices.

OVERVIEW

Based on the analyses we have performed, we have not observed substantial unresolved problems that would prevent the CAISO software systems from calculating prices consistent with the CAISO tariff and LMP pricing methodology and have not observed material unresolved problems that would prevent the software systems from committing and dispatching load and generation based on least-bid cost.

The software is generally working as designed and intended with a few areas in which in-progress software changes will need to be tested and performance evaluated as the CAISO prepares for the go-live date.

TEST METHODOLOGY

The CAISO is conducting a variety of tests of the MRTU software and systems; this presentation and the related report cover one set of those tests.

Seven tests were applied to the analysis track cases:

- Replication of LMP energy prices.
- Validation of energy prices based on marginal generators.
- Consistency between energy dispatch and energy prices.
- Replication of ancillary service prices.
- Validation of ancillary service prices based on marginal suppliers.
- Consistency between ancillary service schedules and prices.
- Consistency between unit commitment and prices.

ISSUE RESOLUTION

Since June the CAISO, Siemens and LECG have analyzed additional test cases that have included:

- Forbidden region constraints;
- Wheeling transactions;
- Multi-hour block schedules;
- Contingency and nomogram constraints;
- Binding export constraints; and
- 18 interval STUC cases

to verify that the software is working as intended and correctly calculating prices.

ISSUE RESOLUTION

Since June, the CAISO, Siemens and LECG:

- Completed analysis of the pricing of ancillary services during shortage conditions and tested changes in the software design.
- Completed identification of marginal units in RTD Case 304.
- Completed verification of LAP prices in Class B cases and resolved other LAP price recalculation issues.

ONGOING CAISO TESTING

The CAISO will be using the price validation tools and processes we have developed to test software changes between now and the go-live date.

- Retest ancillary service pricing during shortages when the new design is embodied in a production version of the software.
- Continue reviewing Case 2006 performance and the cause of the large MIP gap.
- Test the software as enhancements or design modifications are implemented to detect unintended side effects.

The analysis track testing is only one component of the testing being carried out by the CAISO, but it has not identified any unresolved issues that would interfere with a February 1 go-live date.