

# *Review of SMD2 Market Trials*

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LECG was retained to review the results of the Market Trials for the RTS.

LECG's assignment is to assess the economic consistency of the results produced by the SCUC, RTC and RTD software and associated pricing modules.

LECG is reviewing the economic consistency of the SCUC, RTC and RTD results to test for patterns between and among generator and load schedules and energy and ancillary service prices that should be observed if the software is performing as expected. If the tests detect anomalies, LECG works with NYISO staff and/or ABB to identify the reason for the anomaly.

The tests were designed to find flaws in the software logic, not to systematically test the data read by the software.

As Market Trials for RTC and RTD have not yet occurred, LECG will report on its assessment of the two SCUC Market Trials that took place for June 24 and July 8, 2004.

Based on the analysis performed to date for these two SCUC Market Trial runs, LECG has not observed any problems that would prevent the ISO software systems from producing prices consistent with the LBMP pricing methodology and committing and dispatching load and generation based on least cost.

LECG will report separately once the Market Trials covering RTC and RTD have taken place.

# OVERVIEW OF TESTS

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Tests performed to evaluate the results of the two SCUC Market Trial runs included:

- Replicating the LBMPs;
- Examining energy schedules for consistency with LBMPs;
- Examining ancillary service schedules for consistency with LBMPs;
- Examining unit commitment for optimality and consistency with LBMPs; and
- Examining the AMP trigger and mitigation.

# DESCRIPTION OF TESTS

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## Replicating LBMPs:

- Independently replicated the calculation of LBMPs from the component pieces - the reference bus price, the penalty factor, the shift factors and the constraint shadow prices;
- Replicated the zonal LBMPs based on the weighting of each individual bus LBMP.

## DESCRIPTION OF TESTS

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Examining the energy schedules for consistency with LBMPs:

- Verified that LBMPs are greater than or equal to the energy bid price at the dispatch point of any unit scheduled at maximum, given its ancillary services schedules and ramp rate constraints;
- Verified that LBMPs are less than or equal to the energy bid price at the dispatch point of any unit scheduled at minimum;
- Equivalent tests were applied to external generation, external load, dispatchable loads (including virtual load), and virtual supply.

## DESCRIPTION OF TESTS

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Examining the ancillary service schedules for consistency with prices:

- Verified that the ancillary services schedules for generating units were consistent with the market clearing prices for spinning reserves, 10-minute reserves, 30-minute reserves and regulation in each hour for SCUC;
- Verified that there were no other unscheduled resources available to meet ancillary service requirements, considering regional requirements, at bids less than the market clearing prices.

## DESCRIPTION OF TESTS

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Examining the unit commitment for consistency with LBMPs:

- Determined if units not committed could have profitably operated at day-ahead LBMPs;
- Scrutinized sources of uplift to assess the overall reasonableness of uplift.



## DESCRIPTION OF TESTS

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Examining the AMP trigger and mitigation:

- Determined if units failing conduct were appropriately mitigated in the first AMP pass (303).
- Determined if units failing price impact or uplift impact were appropriately identified and mitigated in the second AMP pass (304)
- Determined if “no harm” test was appropriately applied.

LECG was unable to fully test the AMP for the first Market Trial because pass 303 LBMPs were unavailable.

# PROBLEMS IDENTIFIED AND CORRECTED

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The following list summarizes the LECG-identified SCUC problems that have been corrected and verified:

- Overwriting of post-AMP prices (from pass 303) with bid load pass prices (from pass 301). Issue has been fixed with post-AMP prices correctly being posted in second Market Trial.
- Incorrect scheduling of quick-start GTs to provide 10-minute nonspin reserves during hours where the units were constrained by minimum down time requirements and could not provide reserves. Issue was fixed through software modification and did not occur during the second Market Trial.