

Revised Straw Proposal

Modeling of Multi-Stage Generating Units

Submitted by Mark J Smith

Summary:

Calpine continues to support the efforts of the CAISO to modify MRTU systems to more accurately model the unique nature of multi-stage generating units. As the CAISO knows, Calpine has the largest fleet of highly efficient, low-GHG combined-cycle plants in California. When implemented, the straw proposal will allow the CAISO to access the full flexibility of these machines, which currently must remain dormant because of modeling limitations.

Calpine will address issues raised in the straw proposal, the PowerPoint presentation and the teleconference held on April 17, and will follow the outline of the straw proposal.

1. Process and Timetable

While there may be details to be finalized, as discussed below, Calpine believes that the proposal is sufficiently formulated to present this issue to the Board in mid-May.

2. and 3.

No Comments

4. Candidate Design Options

Calpine continues to support the Straw Proposal's preference to use pseudo-plant modeling. As described in our previous comments, the inter-relationship of the output of the embedded generators in a combined-cycle plant makes other alternatives unworkable.

5. Proposed Resolutions

Calpine supports the changes to the proposal suggested in April 14 revisions, although we do offer some further clarifications. Indeed the changes in this document reflect the results of productive and thoughtful dialog on the part of CAISO staff and market participants. The CAISO staff should be congratulated for their outreach, flexibility and diligence.

Particularly, Calpine can support the limitation of bidding no more than 10 configurations for each resource. Our view is that even the more complicated physical configurations can be adequately represented by 10 modeled configurations.

We can also support the more pragmatic limitations suggested for real time. Allowing no more than three configurations will allow generators to meet DA commitments, RA obligations and finally, offer the CAISO at least one additional alternative. We think that, as a first step, allowing up to three configurations reasonably balances the desire for flexibility with the practical need to limit processing time for the 5-minute dispatch in real time. Should initial MSG implementation and operations prove successful, Calpine may seek additional flexibility.

In addition, we understand that all filed configurations will have default energy curves, along with transition costs. While certainly not the preferred outcome, this will allow the CAISO to Exceptionally Dispatch MSGs into other configurations.

In Section 5 of the Revised Straw Proposal, the CAISO identifies 4 requirements on bidding to which Calpine agrees. A fifth condition on bidding was described on the conference call and relates to self-scheduling and is partially referenced in Section 5.9.

As we understand this additional requirement, the CAISO will ONLY allow a generator to self-schedule in the configuration that supports its RA commitment. As an example, if a 2X1, 500 MW combined-cycle generator is fully (500 MW) committed under RA contracts, that generator could ONLY self-schedule in the full 2X1 configuration. Any self schedule in a lower output configuration would be rejected by SIBR rules. The generator would be allowed to submit *economic* bids in a 1X1 configuration that might result in energy awards less than the RA configuration, but could not self-schedule in that lower configuration.

On the flip side, if the same generator only has RA commitments for 250 MW, they could self-schedule in that configuration or any higher output configuration.

Comments of the Calpine Corporation

We understand that this limitation is largely driven by the iterative approach to optimization in the new MRTU software. Specifically, a self-schedule is deemed as a self-commitment to a given configuration. If that commitment is to a configuration with a Pmax less than the full RA obligation, the MRTU software currently has no means of bridging the discontinuous dispatch curve that results from incremental commitments of additional embedded generators. It would, in essence have no access to the full RA capacity.

In order to bridge the discontinuous dispatch curve, it appears that changes to MRTU conceptual approaches and modeling would have to be considered, designed and implemented before MSG incorporation.

Calpine's theoretical preference would be to have the flexibility (and option, not obligation) to self-schedule generation at any level. However, in the light of the software incompatibility in MRTU, and the real possibility of delay in implementation which might result from the required changes, Calpine supports the self-scheduling limitations.

5.1 IFM Bidding

No comments

5.2 Real Time Bidding

Calpine believes that the section that describes the Bid Cost Recovery (BCR) is ambiguous and should be clarified. Nonetheless, if Calpine's understanding of this proposal as stated below is correct, we can support this approach.

Calpine understands the CAISO to be suggesting that BCR rules require slight modifications due to the fact that unlike non-MSG resources, the commitment costs for an MSG could vary from DA to RT, because the optimal configuration could change. Since the actual costs of commitment are ONLY established by real time operation, the CAISO clarifies that it is the RT commitment that normally establishes the costs eligible for BCR.

Then the CAISO qualifies the BCR calculation to suggest that if a generator self-schedules (i.e. self-commits) in RT, that the BCR would be based, not on RT commitment costs, but rather, the DA commitment costs (including any transition costs).

5.3 Resource Adequacy Offer Obligations

In this section, the CAISO assumes that FERC approves an Ancillary Services Must Offer obligation. As discussed on the teleconference, this approval assumption must be highlighted and not presented as a new obligation related to MSG.

5.4 Residual Unit Commitment

No Comments.

5.5 Reliability Must Run Units

Calpine will, and encourages the CAISO to review RMR operation and integration into the MSG in greater detail. For instance, RMR units can be partially dispatched and in order to ensure operation, might otherwise be self-scheduled. However, this practice may be prohibited by the self-scheduling limitations discussed in Section 5, above. In addition, market awards that may be above a partial RMR dispatch could result in a different configuration and require additional commitment costs, in essence creating a hybrid of RMR payments and MSG payments with BCR.

5.6 and 5.7

No Comments

5.8 Local Market Power Mitigation

In this section the proposal suggests that if the generation output is increased in the All Constraints Run (ACR), that all configurations that might include the higher capacity represented by the All Constraints Run would be flagged for mitigation.

However, with non-MSG units, mitigation is the higher of the accepted bid price at the Competitive Constraints Run (CCR) or the Default Energy Bid. If the CCR and ACR are different configurations, how will the mitigation rule be applied? Specifically, will the mitigated price be the higher of (1) the accepted price of the lower configuration at CCR or (2) the DEB of the higher configuration at ACR?

Finally, Calpine believes that Appendix A might be more helpful if the configurations do not overlap thereby representing forbidden regions, as is generally condition for CCGT units. For instance, Configuration 1 could have a Pmin of 150MW and a Pmax of 280MW. Configuration 2 could

Comments of the Calpine Corporation

have a Pmin of 350MW and a Pmax of 520MW. In addition, the bid curves should be modified. As with non-MSG units, bids are not allowed below Pmin, rather proxy costs are applied (and transition costs should be added to get to higher configurations.)

5.9 Self-Schedules

See comments in Section 5, above.

5.10, 5.11 and 16

No Comments