Stakeholder Comments Template

Subject: Straw Proposal on Multi-Stage Generating Unit Modeling

Submitted by	Company	Date Submitted
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This template has been created for submission of stakeholder comments on the following topics covered in the Straw Proposal regarding Multi-Stage Generating Unit Modeling that was posted on Tuesday, February 17, 2008. Upon completion of this template please submit to GBiedler@caiso.com. Submissions are requested by close of business on Wednesday, March 4, 2009.

Please submit your comments to the following questions for each topic in the spaces indicated.

First and foremost, Calpine supports the CAISO efforts to accurately model resources with embedded generation units. We believe that optimal dispatch requires the specification of pseudo-plant (aka configuration-based) modeling.

1. The proposed design for multi-stage generating unit modeling would enable Participants to bid in the multiple configurations of multi-stage units into the Integrated Forward Market (IFM). At most one configuration can be chosen by the IFM, and that configuration would then be locked for the Real Time Market (RTM). Please elaborate on any issues foreseen with locking the configuration passed to the RTM. (Specific examples or scenarios would be helpful.)

   Calpine supports the CAISO proposal to allow multiple configurations to be bid into the IFM, as this allows the IFM to have feasible bids from each configuration and offers the most resource choices available to the optimization software.

   Calpine believes that under normal operating circumstances, a unit that is chosen in the IFM will most likely remain optimal in the same configuration in real time. However, the possibility of abnormal conditions is substantial. Those abnormal conditions could arise in a nodal market due to generation trips, marine layer and other impacts on load, transmission outages and other fundamental changes to the grid.

With this real possibility of abnormal conditions, we believe that "locking" the chosen IFM configuration in RTM will unduly limit the CAISO options and limit the optimization. The following are some thoughts and concerns with the CAISO proposal:

1. Exceptional Dispatch: The proposal suggests that if the "locked' IFM configuration is not needed, or is insufficient in the RTM, that the CAISO would use Exceptional Dispatch to move a unit to a new operating point. However, if a generator is limited in the RTM to submitting a single configuration bid curve, the capacity both above and below that configuration will be infeasible. The only choice the CAISO will have within that configuration would be to de-commit the unit, or run it up to the Pmax of that configuration (not necessarily the Pmax of the facility.)

   To Exceptionally Dispatch a unit to another configuration, the CAISO would need both the transition cost and transition time to the new configuration (if any) as well as bid information – either supplied competitively, or in the form of a default energy bid. Does the CAISO intend to require DEBs for each submitted configuration?

2. Optimal Solution: With only one configuration bid curve, the CAISO will have no RTM bid visibility to other configurations. It is highly likely that moving a unit into a lower (or higher) configuration is much more cost effective than de-committing the unit (or starting another generator).

While Calpine would prefer that no limitations be placed on the number of configurations that could be bid into the RTM, we understand the need to streamline the set of resources in RTM. If all configurations cannot be accommodated in the RTUC or 5 minute RTM runs, some significant subset of all possible configurations should be allowed in order to facilitate optimal solutions, and if needed as a last resort, Exceptional Dispatch.

2. The issue of Resource Adequacy (RA) Must Offer (MO) requirements was discussed on the Conference Call on February 25, 2009. The ISO is considering including in its proposed design the requirement that multi-stage units subject to RA MO requirements would need to bid into the IFM at least one configuration that would fulfill the unit's full RA MO obligation. If no configuration is chosen by the IFM, the units would need to submit a configuration into the RTM that would fulfill the RA MO obligation.

   Calpine believes that RA obligations must be met in both IFM and RTM.

   Calpine believes that the "locking" proposal discussed above will interfere with RA must offer obligations. For instance, let's assume a 2X1 CCGT (say 500 MW) is fully committed to RA (and therefore must offer all of its capacity into the IFM and if committed, into RTM.) If it is selected in the IFM to run in a 1X1 mode (say 280

MW), "locking" this configuration into RTM would mean that the 2X1 RTM RA must offer obligation (500MW) could not be met.

3. Reporting outages and de-rates of units into the Scheduling and Logging for the ISO of California (SLIC) software will be somewhat more complex for multi-stage units. Two options include the following:
1. Submit outages/de-rates at the unit level, and make any changes necessary to ramp rates within the configuration-level bids.
2. Submit outages/de-rates at the configuration level for all configurations impacted by a generating unit, and make any ramp rate changes within the SLIC ticket.
   The IFM and RTM bids for configurations affected by the outages/de-rates should reflect the changes in ramp rates and capacity. Please comment on these options and provide your preference, or any additional suggestions.

Calpine does not understand the difference between the options, as in either case, the derate and any effects on ramping will be reflected in configuration bids and the SLIC ticket will presumably represent the total MW quantity of the derate.