

Subject: Flexible Ramping Product Technical Workshop Topics

Submitted by	Company	Date Submitted
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Wellhead appreciates this opportunity to comment on the CAISO's Flexible Ramping Product Technical Workshop Topics. Wellhead would also like to thank the CAISO for holding the workshop as we found the format both informative and productive.

1) Ramping Products

- a. Wellhead agrees that if the market clearing interval is longer than 5 minutes, then the bid/awarded capacity should be equal to the average sustainable 5-minute ramping capability for the specified market interval.

2) Procurement Target

- a. Wellhead believes that since Flexible Ramping is necessary for the reliability of the grid, then explicit procurement targets should be used. An implicit procurement target is a reasonable long term goal which Wellhead can support, but we believe the CASIO should first focus their efforts on reliability.

3) Obtaining Flexible Ramping Capability

- a. Wellhead seeks further clarification regarding the methodology for obtaining Flexible Ramping capability. Wellhead believes the right methodology will procure the desired capability at the lowest cost to obtain 1 MW of Ramp over the market interval (expressed as \$/interval) and not the lowest cost in \$/MWh of energy as that may cause the CAISO to procure larger amounts of energy than it would otherwise find economic except to obtain the ramping capability.

For example:

i. Unit A:

1. Ramp = 50 MW/5-min
2. Energy Cost = \$50/MWh
3. Minimum Energy quantity necessary to reach ramp = 1 MW
4. Marginal cost of energy for interval = \$20/MWh
5. Cost to obtain 50 MW Ramp for 5 min interval = \$2.50.

ii. Unit B:

1. Ramp = 50 MW/5-min
2. Energy cost = \$25/MWh
3. Minimum Energy quantity necessary to reach ramp = 100 MW
4. Marginal cost of energy for interval = \$20/MWh
5. Cost to obtain 50 MW Ramp for 5 min interval = \$41.66.

- b. Wellhead also believes that the CAISO should be able to delay the decision to commit a unit until the real time (provided there are no automatic buybacks of the ramping award for economic reasons) as this would have a significant cost savings in obtaining the ramping capability.
- 4) Dispatching Flexible Ramping Capability in the RTD
 - a. Wellhead also believes that the CAISO should dispatch the Flexible Ramping energy using an explicit approach to ensure reliability; however, we do support a long term goal of using an implicit approach.
- 5) False Opportunity Costs Payment
 - a. Wellhead believes that capacity awards should be firm unless they are undeliverable, and therefore we do not support the automatic buyback of flexible ramp, nor do we believe it creates a false opportunity cost when a unit is dispatched for energy in the RTD.
 - b. Due to the current market interval differences (15 min vs 5 min) between AS capacity and Flexible Ramp capacity, there is a potential for a true lost opportunity cost in the real time market which must be addressed.
- 6) Cost Allocation
 - a. Wellhead believes that it is both necessary (for contractual reasons) and useful (provide the right incentives) to use the UDP threshold of 5MW or 3% of Pmax for supply allocation to internal CAISO generators.