

California Public Utilities Commission
Flexible Ramping Products Incorporating FMM and EIM
Revised Straw Proposal August 13, 2014

Submitted By	Company or Entity	Date Submitted
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Summary:

The ISO's revised straw proposal for Flexible Ramping Products (FRP) is designed to develop market-based flexible ramping products to address the operational challenges of maintaining power balance in the real-time dispatch. The CAISO will determine the minimum requirement for flexible ramping based on the expected net system movement between the delivery interval and the next interval when the net demand is moving in the same direction. The ISO proposes to restrict all resources to a zero bid price for flexible ramping where the economic bid and the market clearing price determine a resource's opportunity costs. Resource Adequacy (RA) resources would have a must offer obligation (MOO) at least equal to their RA flexible capacity.

The ISO proposes to allocate costs of FRP to load, supply and imports that drive the variability and need for the FRP. Further allocation within each of the major categories will be done based on each resource's proportional contribution to the variation¹. The ISO proposes to exempt resources that manage their variability to stay under +/-3% of their schedule. There are no pay provisions when resources have undispachable, undeliverable, unavailable, and unsynchronized flexible capability. Additionally, to prevent double payment of the opportunity cost, day-ahead FRP awards dispatched for energy in the Fifteen Minute Market (FMM) must buy back the FRP, and similarly any FMM FRP award dispatched in the Real Time Dispatch (RTD) must be bought in RTD.

Staff appreciates this opportunity to comment on this initiative. In general the CPUC staff supports the CAISO proposal and modifications in the revised Straw Proposal for the FRP. In particular, staff supports:

- CAISO plans to set the FRP offer price at zero for all resources in the Integrated Forward Market (IFM), and Real Time Markets (RTMs) where resources enter the flexible Megawatt quantity to control their dispatch.
- The economic bid requirement for Resource Adequacy (RA) flexible capacity resources which requires them to economically bid a minimum quantity into IFM in accordance with their flexible RA contract.

CPUC staff requests further discussion on cost allocation to Variable Energy Resources (VERS) that self-schedule in the five minute Real Time Dispatch (RTD). Due to the complexity of cost allocation treatment of VERs it is unclear whether the CAISO intends that VERs that bid economically in RTD should escape cost allocation for the five minute schedule change.

Background:

The ISO has observed that the fleet of units committed in real-time sometimes lacks sufficient ramping capability and flexibility to handle the 5-minute to 5-minute system load and supply variability. Sometimes the insufficient ramping capability manifests itself by triggering power balance violations, which means there is no feasible system wide real-time dispatch to maintain the supply and demand power balance.

According to the ISO, in the case of power balance violations, undesirable outcomes include:

- The system has to rely on regulation services to resolve the issue in real-time after the imbalance has caused frequency deviation or area control error (ACE).
- When power balance is violated, the RTD energy price is not priced by economic bids, but by administrative penalty prices. Administrative pricing creates market inefficiency in the long run and results in using the high penalty price for the imbalance energy of resources providing regulation services.
- If there is insufficient regulation service, the system must lean on the interconnection with other Balancing Authority Areas, potentially impacting the CAISO system to meet required operational performance criteria.

Since the new nodal market was implemented in 2009, the ISO has had a multi-interval optimization in the unit commitment and dispatch process. The multi-interval optimization can look several intervals ahead to meet forecasted ramping needs. The flexible ramping product is to create ramping margin on top of the forecasted ramp between market intervals, and thus reduce the frequency of power balance violations.

Detailed Comments:

FRP Bidding Rules – Staff supports changes to restrict day-ahead market and real-time markets to zero priced bids, and economic energy offers would become the basis for determining the opportunity cost in all three markets (DAM, FMM and RTD).

In the revised straw proposal the CAISO proposes to set all resources' day-ahead market FRP bids to zero. In order for Scheduling Coordinators (SCs) to prevent a resource from being awarded FRP, such as a resource that does not have a Flexible Resource Adequacy capacity requirement, the SC would enter a zero MegaWatts (MWs) FRP bid quantity.

Staff agrees with the CAISO proposal to base the calculation of opportunity cost on the resource's economic bid and the demand curve. Allowing any resource to economically bid FRP could distort the IFM commitment. Additionally, FRP opportunity cost bidding by any market participant creates an additional layer of market complexity which would require additional market monitoring and market power mitigation schemes to prevent market abuse.

Denying FRP bids by non-RA resources in the day ahead market is consistent with the ISO proposal that denies explicit bids for FRP in the Fifteen Minute Market and the five minute Real Time Dispatch. The economic energy offers should be the sole basis for determining the opportunity cost in all three markets (DAM, FMM and RTD).

Support the economic bid requirement for Resource Adequacy (RA) flexible capacity resources requiring them to economically bid into IFM in accordance with their flexible RA capacity.

Staff concurs with the modified CAISO proposal that would impose a day-ahead market must offer obligation for resource capacity used to meet flexible capacity resource adequacy requirements. For resources with a flexible capacity RA requirement who fail to economically bid, the CAISO would insert economic energy bids at their Default Energy Bid (DEB) amount. The resources with resource adequacy flexible capacity would be required to bid a MW quantity in IFM greater than or equal to its amount of resource adequacy flexible capacity.

The CAISO should clarify the cost allocation to Variable Energy Resources (VERS) that economically bid or self-schedule in the five minute Real Time Dispatch (RTD) to ensure all VERS fairly share in FRP cost allocation.

In the revised straw proposal section 7.3 Billing Determinant of Supply Category, the CAISO intends to allocate cost to supply based on RTD interval to interval schedule changes netted against the difference between RTD and actual uninstructed energy² (UIE). Specifically, for VERS it appears that only self-scheduled VERS will net their RTD interval to interval schedule changes with their uninstructed deviations for cost allocation purposes. It appears that the VERS economically bidding their CAISO schedules in RTD will receive cost allocation based only on their UIE without regard to any RTD interval to interval schedule changes.

² Uninstructed energy (UIE) is the difference between the resource's Real Time Dispatch award and metered energy.

Based on this understanding, CPUC staff believes that economically bidding VERs would have a significant incentive to economically bid into RTD to minimize exposure to FRP cost allocation. Because both economically bidding and self-scheduling VERs use the CAISO forecast for scheduling in RTD, they should both bear the same exposure to CAISO forecast error risks. In addition, allowing the economically bid VERs to exclude the net schedule changes is inconsistent with the allocation calculation used for all other supply resources. CPUC staff requests the CAISO clarify whether they intend the economically bidding VERs to only use UIE for their FRP cost allocation. If that is the case then CPUC staff recommends the net schedule changes used for cost allocation to VERs be excluded only in those intervals when the CAISO economically dispatches VERs that economically bid into RTD.

Conclusion:

The Flexible Ramping Product initiative has many positive features and CPUC staff commends the CAISO and its staff for putting together a comprehensive and thoughtful proposal for this very complex market feature. In general, the CPUC staff supports the CAISO proposal for implementing FRP in the market. In particular, staff supports the modifications that would require resources to bid \$0.00 FRP in the day ahead or real-time markets such that economic energy offers would be the sole basis for determining the opportunity cost in all three markets (DAM, FMM and RTD). Staff also supports the economic bidding requirement for Resource Adequacy (RA) flexible capacity resources that places a must offer obligation (MOO) at least equal to their RA flexible capacity to economically bid their energy into CAISO markets.

Lastly, staff requests the CAISO clarify the cost allocation to Variable Energy Resources (VERS) that economically bid or self-schedule in the five minute Real Time Dispatch (RTD) to ensure all VERs fairly shares in FRP cost allocation.