Stakeholder Comments EIM Offer Rules Technical Workshop

Submitted by	Company	Date Submitted
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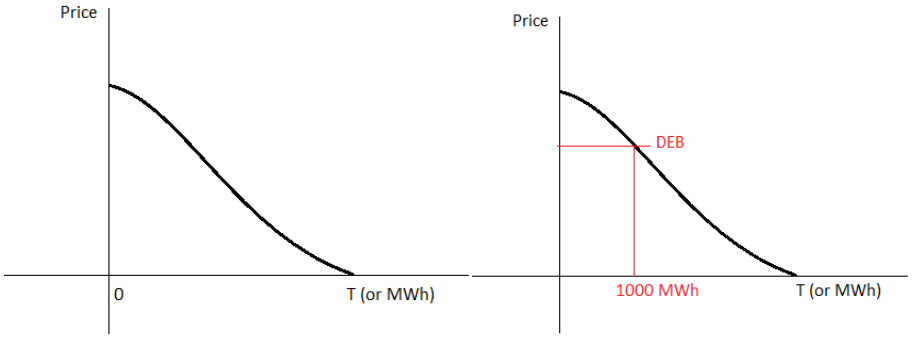
Southern California Edison (SCE) offers the following comments on discussions during the California Independent System Operator's (CAISO) EIM Offer Rules Technical Workshop[1]. As the discussions were around default energy bids (DEB) for hydro resources, there needs to be a distinction between generic hydro system without pumped storage and those with pumped storage. Given the complexity associated with hydro systems with pumped storage, a determination on DEBs for such systems may be more complicated than a hydro system without pumped storage. As such the comments herein focus on generic hydro systems without pumped storage for simplicity[2]. In general, SCE believes that DEBs for hydro resources, or broadly energy/use limited resources, should be set high enough to allow the best use of the limited output of the resource, and low enough to provide effective market power mitigation. To achieve this, it's critical that the DEB should be set at the *lowest* point of the most valuable portion on the resource's price duration curve, as further illustrated below. SCE further notes that this is the logical competitive outcome that would occur based upon profit maximization of an entity that does not possess market power.

Consider an energy-limited resource over time horizon T. In order to find the right level of DEB for the resource, one should first establish a price distribution curve over T. This is necessary to identify the most valuable hours for the resource to produce within the time period. Once the price duration curve is determined, one needs to identify the point on the curve corresponding to the total energy output for the resource available during T. This point represents the *lowest* point of the most valuable duration, i.e., the most profitable hours given the use limitation of the resource.



[1] CAISO EIM Offer Rules Technical Workshop, July 19, 2018: http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=330E5E16-D226-4C3D-9B39-738FC19E7A55

[2] If needed, discussion on pumped storage DEBs can be more complicated and therefore, it is likely the rules on determining pumped storage DEBs would be more complicated as well. Such a discussion should only occur after an understanding of the simpler example of non-storage hydro DEBs has been worked through.

Left: a price duration curve during a period T. Right: an example for the determination of DEB for a resource with 1000 MWh energy limitation during T (Y axis represents the market price the resource would receive when dispatched; X axis represents time interval from 0 to T, which can translate to MWh).

Setting the DEB at this lowest point would not impact the hours the resource should be dispatched. At the same time, it would also provide effective market power mitigation since setting the DEB at any price above leads to a situation where the resource may not be mitigated when the resource indeed is assessed to have market power under the local market power mitigation (LMPM).

Given the discussion above, the proposal presented by Powerex[3] during the workshop appears to have several issues and draws the following questions:

- How would the proposal result in appropriate DEBs for hydro, i.e., the lowest point of the most valuable duration on the price curve for the resource as illustrated above?
- How would the proposed formulation (i.e., 250% of ICE Day-Ahead On-Peak Index or 200% of On-Peak Forward Prices) result in a different DEB for resources with different energy limitations (e.g., a resource with 1,000 MWh limitation will have a different DEB from that with a 10,000 MWh limitation if the Pmax is the same for the resources)?
- In general, what is the magnitude of the energy limitation (in terms of MWh), and what is the associated time horizon of hydro resources that Powerex sees issues that can't be resolved under the existing DEB election options in Tariff?[4]
- Would the proposal distinguish a hydro resource from pump storage resource?

In summary, SCE appreciates the discussion during the workshop and various proposals that have been presented. SCE believes that any formulaic approach to calculate DEBs for hydro resources, or broadly other energy-limited resources, should reflect the lowest point of the most valuable duration on the resource's price curve. Until these proposals are well understood and issues are fully resolved, the existing negotiated rate option appears to be one viable option to determine the DEB for an energy-limited resource.

[3] Powerex Presentation, at 15, http://www.caiso.com/Documents/PowerexPresentation-EnergyImbalanceMarketOfferRulesTechnicalWorkshop-Jul19-2018.pdf

[4] In theory, the negotiated DEB with the DMM could produce a value identical to that described in these comments which would ensure that the DEB is neither too low nor too high.