

March 25, 2019

CAISO Board of Governors
CALIFORNIA ISO
PO Box 639014
Folsom, CA 95763-9014

Dear Members of the Board:

I am writing to express Powerex's strong support for the CAISO's Local Market Power Mitigation Enhancements, Draft Final Proposal, and to urge the Board to adopt the proposal without modification.

The CAISO's Draft Final Proposal represents a critical step toward making EIM participation more workable for hydro resources, particularly the storage hydroelectric systems of the northwest. These systems are highly complex, and their planning and operation must consider multiple uncertain factors, the inter-relationships between multiple facilities, and a wide range of ever-changing constraints. It is thus exceedingly challenging to estimate the marginal opportunity cost of energy from such systems, even for entities with decades of first-hand experience and with personnel with extensive expertise in the planning and optimization of such systems. For decades, the output of coordinated northwest hydro systems has been marketed to other parties through bilateral transactions, and has been used to support participation in the CAISO organized markets at intertie scheduling points since that market was launched two decades ago. This market participation has occurred successfully without application of automated bid mitigation procedures, relying instead on competitive market conditions to drive efficient market prices.

The advent of the Western Energy Imbalance Market ("EIM") marks the first instance in which bids and offers from northwest storage hydro resources are subject to being automatically overridden by an externally-computed value or "default energy bid". This major paradigm shift was made all the more challenging by the fact that CAISO's existing approaches for applying local market power mitigation and for determining default energy bids were largely rooted in the historical context of a largely thermal generation fleet located fully within an RTO footprint. Such existing approaches generally had not been applied to more complex energy-limited storage resources. Indeed, battery storage resources within the CAISO footprint are currently entirely exempt from bid mitigation, even though estimating opportunity costs for such resources is comparatively simpler.

Not surprisingly, the pre-existing approaches to bid mitigation are highly problematic for entities that market the output of storage hydro resources. Powerex identified this as a critical issue that would need to be addressed early in its own exploration of participating in the EIM. Powerex's concerns were borne out in its parallel operations, when it became clear that its offer prices could be overridden to levels far below its own estimate of opportunity costs, and would apply even in hours when Powerex sought to be a purchaser of imbalance energy. The potential consequences of having its energy-limited EIM resource inefficiently depleted in the wrong hours led Powerex to protect against such outcomes by reducing the quantity of transmission it voluntarily made available for EIM transfers in certain hours. Similar concerns were expressed by PacifiCorp, who also experienced inefficient depletion of its hydro resources in the EIM as a result of inaccurate default energy bids.

To respond to this challenge, numerous northwest entities—including a diverse group of entities with direct experience marketing the output of hydro resources, and including both entities that have committed to participating in the EIM and those still possibly considering it—came together and pressed CAISO to urgently convene a stakeholder process to develop a "fourth option" for calculating default energy bids that would be more workable for storage hydro resources.

CAISO initiated that stakeholder process with an issue paper in September 2018. Powerex commends CAISO for the resources it committed to that process and to its receptiveness to the input and concerns of northwest hydro entities. As is evident from the Draft Final Proposal, CAISO gave substantial weight to the firsthand experience and input from the entities that own, operate, or market the output of northwest hydro resources. While CAISO, DMM and numerous stakeholders expressed their theories of how they believed marginal opportunity costs for hydro resources might be calculated, CAISO heard directly from northwest hydro entities about the factors they actually consider when making these critical business decisions. Powerex is optimistic that the Draft Final Proposal will prove to be workable in the large majority of circumstances precisely because of CAISO's receptiveness to the needs and perspectives of northwest hydro entities.

The Draft Final Proposal actually comprises several enhancements to the CAISO's bid mitigation procedures. These elements are highly complementary, providing safeguards in the event that any individual element is not fully effective. For instance, while Powerex is optimistic that the default energy bid proposal will provide improved flexibility for hydro entities to reflect their estimates of opportunity costs, the Draft Final Proposal also provides the ability for entities to voluntarily limit net exports during intervals that mitigation is applied. This provides a critical backstop in the event that the proposed hydro default energy bid formula fails to reflect opportunity costs as estimated by the entity marketing the output of the hydro facility on any given hour or day. Similarly, the components of the proposed hydro default energy bid formula also reflect a careful balance. For instance, the default energy bid formula considers market prices for only a limited subset of standard market products, and applies a relatively modest multiplier, which on its own would likely fail to reflect the actual range of opportunity costs. This approach is made significantly more workable, however, since the formula also includes market prices across the maximum potential storage horizon of a given resource and from multiple geographic locations (for sellers that demonstrate that such locations actually reflect alternative sales opportunities). It is widely recognized that there is no "perfect" approach, and each element in isolation can likely be argued to be either too "restrictive" or too "generous." Some stakeholders may continue to express opposition to individual elements of the proposal, or to specific parameters of the default energy bid formula. However, Powerex urges the Board to recognize that it is the totality of the proposed enhancements—not any one proposal on its own—that holds the promise of making EIM participation more workable for northwest hydro resources. Modification of any individual aspect of the Draft Final Proposal, particularly at this late stage, has the potential to jeopardize the careful balance that has been crafted through this extensive stakeholder process.

The ultimate goal—and the ultimate benefit—of the proposed bid mitigation enhancements is to provide reasonable protection to buyers against the exercise of market power without elevating the risk of adverse operational and financial outcomes that would discourage sellers from participating in the EIM. Thus, overly-restrictive mitigation works against the interest of not just sellers, but also against the interest of purchasers, who may face reduced transaction opportunities (at any price) as a result. Powerex is optimistic that the Draft Final Proposal marks a major improvement over the status quo, and will prove to be workable for EIM participation by northwest hydro entities in the large majority of circumstances. For this reason, Powerex urges the Board to support the Draft Final Proposal without modification.

Yours truly,



Mike MacDougall
Vice President, Trade Policy and IT
Powerex Corp