Comments of Powerex Corp. on
Day Ahead Market Enhancements Revised Straw Proposal

Submitted by	Company	Date Submitted
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Powerex appreciates the opportunity to submit comments on CAISO's April 11, 2018 Day-Ahead Market Enhancements Revised Straw Proposal ("Revised Straw Proposal"). CAISO states that the purpose of this initiative is to enhance the reliability and efficiency of the CAISO grid by addressing limitations in existing day-ahead market processes. In particular, CAISO proposes to:

- Transition the day-ahead market from hourly to 15-minute scheduling;
- Combine the IFM and residual unit commitment ("RUC") processes; and
- Procure day-ahead imbalance reserves to ensure that sufficient upward and downward capacity is available to address deviations in demand and supply between the integrated forward market ("IFM") and real-time market.

Powerex generally supports the above proposals to enhance the day-ahead market. In particular, Powerex believes that replacing the current RUC process with a framework to co-optimize energy and imbalance reserves can provide CAISO with the tools to address a broader range of market and system conditions. As explained in the Revised Straw Proposal, the co-optimized energy and imbalance reserves will allow the CAISO to schedule and commit units in the day-ahead timeframe to address upward and downward uncertainty, where presently no such capability exists, even through the RUC process. Additionally, the proposal will allow the CAISO to avoid scheduling and committing units in excess of forecast load, which is also not currently possible, and hence provide CAISO with additional tools to manage oversupply conditions. Finally, shifting to 15-minute granularity will allow the day-ahead solution to account for anticipated intra-hour conditions, and leverage 15-minute intertie scheduling capability, instead of being limited to scheduling and committing resources in full one-hour blocks.

The Revised Straw Proposal provides details on many of the proposed enhancements, and it is these details that are the focus of Powerex's current comments.

Imbalance Reserve Should Be A Separate Biddable Product

The Revised Straw Proposal states that "Only a bid price will be submitted because the total quantity that a resource can be awarded will be determined based upon its energy bid range and its ramp capability over the 15-minute interval. The default bid price for imbalance reserves will be $0.00/MWh. If a resource doesn't submit an energy bid, the resource cannot be awarded imbalance reserves."[1]

Powerex believes it would be inappropriate and inefficient to tie the eligibility to provide the imbalance reserve product to a participant's willingness to provide energy. Powerex understands the proposal would force all entities that submit energy offers to also offer to provide imbalance reserves. Since an award of imbalance reserve is a commitment to submit offers in the real-time market, this means that a participant's offer to sell energy in the day-ahead market could be transformed under this proposal to an obligation to offer to sell energy in the real-time market (and potentially at the same energy offer price that was submitted in the day-ahead market[2]). The inference that all offers to sell energy in the day-ahead market are also offers to commit to participate in the real-time market is tantamount to a "must offer" requirement, and is inappropriate in the absence of a commitment to offer such a product.[3]

Additionally, the imbalance reserve "must offer" design would not be uniformly applied to all resources. Specifically, the quantity of imbalance reserve that is deemed to be offered is determined not by an expressed willingness to do so, but by the ramping capability of the resource. Consequently, a fast-ramping unit could be deemed to offer imbalance reserves for a large fraction or even all of its offered energy bid range, while a slow-ramping unit may not be deemed to offer any imbalance reserves at all. Intertie resources, meanwhile, would be deemed to offer imbalance reserves for the entire bid range of the energy offers. While Powerex believes it is appropriate for the *eligibility* of resources to offer imbalance reserve to be defined by characteristics such as ramp rates, it seems highly discriminatory and inappropriate for these characteristics to dictate a non-uniform *obligation* on resources.

The proposed design is also likely to be inefficient, and deprive the CAISO of potential sources of imbalance reserve that might otherwise be available. In particular, the Revised Straw Proposal does not envision a way for a resource to offer to provide imbalance reserve *unless* it is also willing to offer to provide energy. Powerex believes it is likely that there would be resources that are not seeking, and potentially face limitations on, the quantity of energy they can commit on a day-ahead basis, but that would be willing and able to commit on a day-ahead basis to submit energy offers to the real-time market. By inappropriately linking together distinct products—day-ahead energy and day-ahead capacity—the Revised Straw Proposal will needlessly reduce the amount of one or both of these products that is available in the day-ahead market.

[1] Revised Straw Proposal at 20.

[2] CAISO April 18, 2018 Presentation on Revised Straw Proposal, at 66. ("Generally, if two resources has the same IR up bid, you would prefer to award the resource with the lower energy bid … Do we need to lock the bids for real-time which reduces flexibility?")

[3] This requirement is distinct from the current design of the Flexible Ramping Product, which is used to position and compensate resources in the ***same*** temporal market that they have affirmatively offered to participate in (*i.e.*, the real-time market).

Powerex recommends that CAISO revise the bidding design of the imbalance reserve product to enable participants to specify the price *and* quantity of this product separately from the price and quantity of offers for energy. Appropriate constraints will need to be defined to ensure the combined awards of energy and imbalance reserve do not exceed the capability of a resource, but Powerex does not believe this would make the optimization unworkably complex.[4]

Imbalance Reserve Should Not Be Used To Backstop Awards Of Speculative Intertie Supply

The Revised Straw Proposal identifies the types of actions that consume, or increase the requirement for, imbalance reserve. These factors primarily reflect *unavoidable* uncertainty due to unpredictable conditions: namely wind, solar, and demand. Indeed, the discussion on calculating the imbalance reserve requirement in Appendix B focuses exclusively on load, wind, and solar forecasting techniques. Imbalance reserves are also used to commit physical resources to be available to replace day-ahead net virtual supply, in much the same way that RUC is used for this purpose today.

The Revised Straw Proposal also identifies "imports that don't tag their IFM schedule" as a use of imbalance reserves. Powerex strongly disagrees with this use, and urges CAISO to revisit how it views the relationship between non-delivered imports and imbalance reserve. Specifically, Powerex believes it is appropriate for imbalance reserve to be committed to ensure sufficient resources are available in real-time to manage imported supply that does not perform as a result of *unavoidable* circumstances beyond the control of the seller; this is analogous to imbalance reserve being used to manage in-state generation that experiences a unit trip, for instance. But Powerex does not believe it is efficient or appropriate to design the imbalance reserve functionality as a way to backstop import schedules that fail to deliver because the schedule was merely a speculative offer by a marketer, unsupported by physical supply and transmission from the outset.

Under the current CAISO rules for offering supply at intertie scheduling points, a scheduling coordinator does not need to specify the physical supply or transmission service that will support the energy being offered. It is only when the scheduling coordinator submits a valid e-Tag that CAISO has information and visibility into the physical supply and transmission arrangements through which the schedule will be satisfied. Such e-Tags are not required until the WECC scheduling deadline of 20 minutes prior to the start of the delivery hour, however.

It is therefore possible, under the existing framework, for a scheduling coordinator to offer to sell energy at a CAISO intertie on a purely speculative basis. That is, without having first secured physical supply and transmission service, and instead relying on being able to secure supply and transmission service bilaterally in the markets outside of the CAISO grid, but only *after* (and if) their offer is accepted in the day-ahead market. This exposes the CAISO grid to import

[4] Even under the Revised Straw Proposal, the maximum quantity of imbalance reserves would need to be specified separately from the maximum quantity of energy, due to ramp limitations or potential "disqualification" provisions (Revised Straw Proposal at 23). The optimization would also still have to ensure that the combined energy and imbalance reserve awards to not exceed the physical capability—including both capacity and flexibility—of the resource.

delivery failures when the scheduling coordinator is not able to secure physical supply in the regional bilateral markets, or opts not to do so due to higher-than-anticipated prices. Importantly, the risk of delivery failures increases during periods of tight regional grid conditions, which is precisely when the consequences to the CAISO grid of such delivery failures is also elevated (since CAISO, too, is likely to experience difficulty procuring additional supply in real-time). This means that import delivery failures are *not* random unavoidable events beyond the control or foresight of the scheduling coordinator. Rather, they are the result of the rules regarding supply offers at the CAISO's interties, which do not distinguish between offers of physical supply and offers of speculative supply.

Powerex recognizes that CAISO intends to explore measures to reduce intertie delivery failures in a different stakeholder initiative. In the present initiative, however, Powerex believes it is imperative for CAISO to clearly frame the purpose of imbalance reserves as (1) protecting against genuine error and unavoidable uncertainty regarding physical supply and demand; and (2) committing resources to replace *known* non-physical supply (*i.e.,* virtual supply). Powerex believes imbalance reserves should *not* be used as a tool that permits undisclosed non-physical supply to be treated as real physical supply, however. There are two specific reasons why such an approach would be unworkable. First, due to the systemic nature of the risk of delivery failure, the quantity of imbalance reserve needed to protect against this risk would need to be based on the *maximum* potential failure, not the average historical failure rate. This is likely to be very costly, and may ultimately lead to fewer imbalance reserves being procured than is necessary to protect against this risk. Second, it will be very difficult or impossible to appropriately allocate the cost of imbalance reserves to the scheduling coordinators that offer speculative supply, since the speculative nature of the schedules will not be evident except when non-delivery actually occurs. This means that the cost of imbalance reserves needed to protect for the risk associated with speculative supply will largely be borne by other users of the grid rather than by the entities that cause those costs to be incurred.

<u>Ensuring Performance Of Imbalance Reserve Awards</u>

The Revised Draft Proposal describes two potential approaches to ensure that resources that are awarded imbalance reserve in the day-ahead market perform according to the requirements of those awards. The first proposed approach would reduce the quantity of imbalance reserve that a resource is eligible to provide if the resource fails to satisfy a minimum threshold of performance (*e.g.,* 95% of awarded imbalance reserve). The disqualification provisions would be escalating, with repeat performance failures leading to longer disqualification periods. The second proposed approach would apply financial penalties, including clawing back the payment for the day-ahead imbalance reserve award, but potentially a multiple of that amount as further financial disincentive against non-performance.

Powerex believes that both approaches have some merit. Ultimately, however, a failure to perform on imbalance reserve awards is not simply a matter of equity or market efficiency, but it can actually leave CAISO operators without access to the resources needed to safely and reliably operate the grid in real-time. Powerex believes that the potential reliability implications

of non-performance require that steps be taken to ensure imbalance reserve is awarded to resources that *do* perform, not just to resources with a financial incentive to perform. As is recognized in the Revised Draft Proposal, a financial penalty "does allow the scheduling coordinator to make an economic decision whether or not to meet its must offer obligation for a given 15-minute interval." In contrast, the concept of forward-looking disqualification can help affirmatively and prospectively ensure that imbalance reserve is not awarded to resources with a track record of non-performance. Powerex therefore supports the inclusion of such a mechanism, and recommends that CAISO provide additional design details in a future version of the proposal.

Imbalance Reserve Procurement Penalty Price Should Be Addressed As Part Of A Comprehensive Review Of CAISO Shortage And Scarcity Pricing

The Revised Straw Proposal seeks comments on the use of a penalty price to apply when the day-ahead optimization does not procure the target quantity of imbalance reserve.[5] The Revised Straw Proposal is considering applying the same penalty price that is used for the Flexible Ramping Product penalty price in the real-time market, or using a tiered penalty price that depends on the quantity of the shortfall.

Powerex believes that the overriding objective of the design of penalty pricing should be to support accurate price formation in the CAISO markets. A properly designed and implemented penalty pricing framework ensures that prices reflect shortages of products that the market was unable to procure, and that this is reflected in the prices of all products that are full or partial substitutes for the scarce product. For instance, a shortage of one type of reserve should be reflected not only in the market price for that reserve, but also in the price of energy, if energy needs are met in part by deploying resources that otherwise would provide the reserve experiencing a procurement shortfall. It is not clear to Powerex that CAISO's markets currently achieve this broader price formation objective. For instance, there have been numerous instances in which shortages of certain ancillary services occur and are reported, but these shortages have no perceptible impact on market prices.

For this reason, Powerex believes that the appropriate penalty price for imbalance reserve procurement shortfalls should be addressed as part of a more comprehensive examination of shortage and scarcity pricing in the CAISO. Such an examination should explore best practices including not only the structure of penalty pricing, but ensuring that those penalty prices are properly reflected in all affected products. The use of operating reserve demand curves or other instruments to signal escalating tight market conditions should also be explored.

[5] Revised Straw Proposal at 21.

15-Minute Granularity Should Apply To Day-Ahead Self-Schedules On A Non-Discriminatory Basis

Despite the proposed adoption of 15-minute granularity in the day-ahead market, the Revised Straw Proposal states that "self-schedules will be awarded a flat schedule for the hour."[6] It also proposes that this limitation will not apply to load and VER self-schedules, however, which will be permitted to self-schedule on a 15-minute basis.

Powerex believes that all self-schedules should be eligible to be specified with the same level granularity, without discrimination between different types of self-schedules (*e.g.,* load, VERs, conventional generation, imports, or exports). Enabling self-schedules to be specified on a 15-minute basis, rather than forcing them to be specified in hourly blocks, will allow the day-ahead optimization to more accurately reflect the 15-minute conditions of the grid.

Additional Clarification Is Needed Regarding The CRR Clawback Rule

In the Revised Straw Proposal, CAISO explains that "Assuming the CRR auction remains in hourly granularity, the CAISO does not anticipate changes to the CRR clawback rules."[7] Powerex believes that additional clarity is required on this issue. Specifically, the CRR clawback rule is designed to permit day-ahead import awards to be economically re-bid in the real-time market at a price at or below the day-ahead market clearing price at the respective intertie scheduling point, without triggering the CRR clawback provisions. If the day-ahead market transitions to 15-minute granularity, however, there will not be just one day-ahead price for the hour, but four. CAISO will therefore need to specify which of the four day-ahead prices (or a combination of those prices) establishes the maximum offer price for re-bidding imports into the real-time market under the CRR clawback rule, given that real-time offers will still be required to submit a single bid curve for the entire hour.

Imbalance Reserve Offer Price For RA Resources

The Revised Straw Proposal envisions that RA resources will not be required to submit an offer price of $0/MWh for imbalance reserve. Powerex believes that additional discussion and clarification is necessary regarding this aspect of the proposal.

First, Powerex requests that CAISO recognize that resources providing Flexible RA already have an obligation to offer their contracted capacity in the real-time market. The Flexible RA product therefore establishes both a requirement and provides compensation for real-time market participation. In order for CAISO to determine the efficient positioning and commitment of resources providing Flexible RA, it is necessary for these resources to offer to provide imbalance reserve in the day-ahead market. Moreover, since these resources are already receiving compensation for their commitment to participate in the real-time market, additional

[6] Revised Straw Proposal at 15. (Footnote omitted)

[7] Revised Straw Proposal at 25.

compensation for imbalance reserve is perhaps neither necessary nor appropriate. For these reasons, Powerex requests that CAISO clarify that resources providing Flexible RA will be required to offer imbalance reserve at a price of $0/MWh in the day-ahead market, with any day-ahead compensation for imbalance reserves being attributed to the entity that has purchased the Flexible RA capacity from the resource.

Second, Powerex notes that the lack of a $0/MWh offer requirement for RA resources appears to be a change from the current framework in which RA resources may be committed through the RUC process and do not submit availability bids.[8] Since the Revised Straw Proposal characterizes the imbalance reserve product as the successor and replacement for RUC, greater clarity on the reasons for this design change would be beneficial to stakeholders.

Finally, Powerex notes that the limited explanation offered by the Revised Straw Proposal centers on concerns that arise only "[w]hen the day-ahead market is extended to EIM entities[.]"[9] Powerex believes it is premature to reach conclusions on the extension of the day-ahead market to EIM entities, or to pre-judge the appropriate interaction between market processes in the CAISO balancing authority area ("BAA") and the rest of the EIM entities. Moreover, the basic equity concern expressed in the Revised Straw Proposal can be addressed in other ways (*e.g.,* constraints on commitment of California RA resources to support requirements outside the CAISO BAA). Powerex recommends that the imbalance reserve product be designed in the manner that is most efficient for the market that is known to exist: that is, the day-ahead market for the CAISO BAA. If and when the CAISO's day-ahead platform is made available to entities outside of the CAISO BAA, appropriate measures can be explored with stakeholders at that time, including measures to address any equity or fairness concerns associated with the provision of imbalance reserve, as well as other elements of the CAISO's day-ahead market design.

Modifications to the Energy Imbalance Market

Powerex generally supports modifications to the Energy Imbalance Market that would complement the proposed Day Ahead Market Enhancements, including allowing EIM base schedules to be provided at a 15-minute granularity. Powerex also supports carefully crafted improvements to the EIM Resource Sufficiency framework that would allow for failure consequences (i.e., EIM transfer limitations) to be more closely aligned with the specific periods in which failure has occurred.

However, as recently discussed at the April 30 EIM Offer Rules workshop, Powerex has identified several specific gaps in the existing EIM Resource Sufficiency framework that are preventing the existing tests from functioning effectively and from being applied in a consistent manner to all EIM Entities and the CAISO BAA. Powerex believes it is imperative that the issues raised at the April 30th workshop be thoroughly evaluated in a separate stakeholder process, in conjunction with enhancements to the EIM Resource Sufficiency framework. Accordingly,

[8] Revised Straw Proposal at 20.

[9] *Id.* at n.13.

Powerex believes that any changes to the EIM Resource Sufficiency framework proposed in the Revised Straw Proposal should be moved to a separate stakeholder process that is dedicated to a more comprehensive review of existing gaps in, and potential enhancements to, the existing EIM Resource Sufficiency framework.