

Comments of Powerex Corp. on System Market Power Mitigation

Submitted by	Company	Date Submitted
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The CAISO Department of Market Monitoring (“DMM”) 2018 annual report expressed concern that prices during a narrow subset of hours in 2017 may have indicated that the CAISO balancing authority area (“BAA”) was not structurally competitive during these periods. In response, the CAISO committed to examining *whether* elevated prices, such as those identified by DMM, may be the result of system-level market power and may not be consistent with a workably competitive market.

In May 2019, CAISO published the initial results of its analysis, which showed, among other things, that elevated prices were *relatively rare*, and were very strongly associated with conditions of *limited total supply* in its markets (*i.e.*, tight market conditions). CAISO subsequently followed up on this analysis, demonstrating that the limited number of hours with elevated prices all occurred during hours when the CAISO BAA had limited remaining supply and/or local natural gas prices were elevated.

A small group of California stakeholders strongly disagree with CAISO’s analysis. This group of stakeholders insist that the high-price events identified by CAISO were likely the result of system market power, downplaying the enormous gaps in the state’s resource adequacy framework and the resulting tight market conditions that are now occurring more frequently as supply conditions grow tighter in the CAISO BAA and across the west. This small group of stakeholders argue that there is an “urgent need for a system-level market power mitigation” framework,¹ and collectively advocate that the CAISO commence a formal stakeholder initiative to develop expanded bid mitigation procedures that could be applied to resources inside and outside of the CAISO BAA.²

Powerex believes there is nothing in CAISO’s extensive analysis to indicate that there is any “urgent need” for a fast-tracked stakeholder process focused on developing and implementing new, sweeping, and unprecedented price mitigation procedures. To the contrary, the CAISO’s analysis shows the large majority of the elevated price events have occurred when local natural gas prices were elevated and/or total supply was at or below the minimum level necessary to meet demand as well as necessary operating reserves. This is particularly the case when CAISO’s typical need for approximately 3,000 MW or more of day-ahead upward balancing reserves are recognized as part of the CAISO’s need for operating reserves, even though these balancing reserves are currently procured through various out-of-market actions. In short, virtually all of the high prices can be traced back to conditions in which the CAISO market simply

¹ SCE May 20, 2019 comments at 1.

² PG&E May 20, 2019 comments at 1; SCE May 20, 2019 comments at 3.

lacked supply (*i.e.*, scarcity conditions existed) and/or when prices were reflective of local natural gas conditions (including price levels, price uncertainty, and/or fuel supply availability uncertainty). Moreover, while the prices under scrutiny may initially appear “high” relative to CAISO prices in other hours, the prices were fully consistent with the competitive wholesale market prices that prevailed across the west (for multi-hour blocks of energy transacted in the day-ahead bilateral markets outside the CAISO BAA). The CAISO analysis—together with additional analysis provided by stakeholders and by the Market Surveillance Committee—convincingly shows that prices in the CAISO BAA during the identified hours have been competitive, as the CAISO BAA had transmission access to additional supply from external areas, and prices in the CAISO BAA converged to the value of external supply during these tight western grid conditions.

Lacking clear evidence of an actual problem, Powerex believes it would be inappropriate for CAISO and stakeholder resources to be siphoned away from an already-heavy slate of genuinely urgent initiatives, including efforts needed to strengthen California’s Resource Adequacy framework, structurally enhance the day-ahead market design, and explore a regional day-ahead market. Each of these initiatives is critically necessary in order to maintain reliability and ensure efficient market outcomes as renewable resource integration continues in the CAISO BAA and across the West.

It is particularly important that CAISO focus its efforts on meaningfully addressing the chronic under-procurement of forward capacity, flexibility and energy by California load-serving entities (“LSEs”), which has left CAISO operators with the daunting challenge of balancing the growing needs of the CAISO BAA each day without the tools or committed physical resource capabilities necessary to do so.³ Faced with acute and growing reliability challenges, CAISO should reject calls to invent new measures designed to inefficiently suppress market prices, which would only serve to further erode the incentives for California LSEs to invest in procuring sufficient capacity, flexibility and energy necessary to maintain reliability. Rather than improperly suppressing the prices associated with tight grid conditions, CAISO should focus on measures designed to ensure that California LSEs are *required* to commit sufficient physical supply capabilities on a forward basis to allow CAISO to reliably operate its system and thereby reduce CAISO’s continued reliance on the declining availability of external, voluntary, short-term supply.

Powerex emphasizes that its opposition to calls for CAISO to immediately and exclusively pursue expanded bid mitigation should not be misconstrued as opposition to the CAISO’s exploration of potential price formation improvements in a more comprehensive manner. To the contrary, Powerex strongly supports engaging in a full review of price formation practices as a necessary component of to the CAISO’s current exploration of the expansion of the day-ahead market outside of the CAISO BAA. Such an initiative should evaluate price formation in CAISO’s current markets, price formation in the western bilateral markets, and price formation in other organized markets in order to identify best practices that can form a workable foundation for a regional day-ahead organized market. Powerex believes a proper examination will need to be comprehensive,

³ See, *e.g.*, CAISO Reply Comments in CPUC Rulemaking 16-02-007, at 1, observing that “no party provided evidence that contradicts the Proposed Decision’s finding that ***there will be a significant capacity shortfall without incremental resource additions or extensions*** of the once-through-cooling (OTC) policy compliance dates for existing generators that are scheduled to retire.” (Emphasis added)

covering all aspects of price formation in order to ensure that prices are accurate, efficient, and equitable, and are neither inefficiently elevated or inefficiently suppressed. Such an examination will provide an appropriate forum to explore concerns related to the potential for seller market power at a BAA-level, along with concerns related to efficient scarcity or shortage pricing, fast-start pricing, and reducing the fragmented procurement of products and associated out-of-market side payments. Powerex looks forward to engaging in a comprehensive examination of price formation practices, which will support more efficient pricing in all hours and under all circumstances.

A. General Comments On CAISO's Approach In This Stakeholder Initiative

Powerex strongly supports the CAISO's commitment to ensuring that pricing rules in its markets are designed in a manner that promotes workably competitive, efficient, and equitable outcomes. This includes active engagement to ensure that flawed market designs or the exercise of market power do not elevate prices above efficient levels or suppress prices below efficient levels. Powerex highlights the fundamental importance of what FERC, CAISO and other market operators have uniformly acknowledged as the starting point for such a discussion: that in a well-functioning organized energy market, prices should generally reflect the marginal cost of meeting the next increment of demand except during periods of scarcity, when prices must rise above marginal cost in order to signal the need for the entrance of additional supply.⁴

Although this stakeholder process was prompted by the concerns of a particular group of California's stakeholders focused on the potential for inefficiently elevated prices, Powerex believes that CAISO's careful and considered approach in this stakeholder process demonstrates its commitment to take an independent and balanced perspective when examining such issues. In particular, CAISO has recognized that high prices, on their own, are not synonymous with seller market power, and may represent the efficient price outcome under certain conditions.

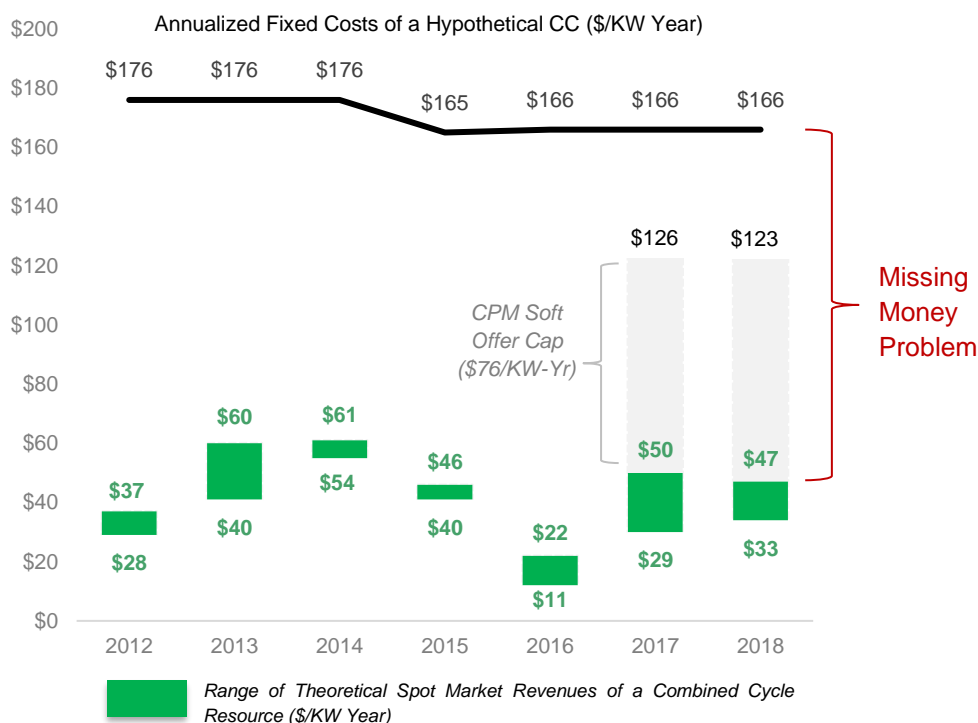
Powerex believes that CAISO has appropriately sought to distinguish between identifying and addressing seller market power from simply seeking to reduce prices as a goal unto itself. To this end, CAISO has provided substantial analysis and data, has conducted a series of working group sessions and presentations, and has drafted a conceptual BAA-level mitigation design proposal. Powerex believes that CAISO—as the market operator responsible for both reliability and efficient outcomes—clearly is seeking solutions that take into account the importance of implementing sound market mitigation measures, while at the same time avoiding unnecessary or inappropriate interventions that could suppress prices and discourage efficient supply and demand participation, particularly in peak periods. CAISO's considered approach also rightly reflects its understanding that a complex and interrelated set of factors affects both supply and pricing in its markets.

⁴ *Price Formation in Organized Wholesale Electricity Markets*, Docket No. AD14-14-000, Staff Analysis of Shortage Pricing in RTO and ISO Markets at 5 (Oct. 2014) (explaining that, during periods of scarcity, the price of energy should reflect the opportunity costs associated with reducing reserves in addition to the marginal cost of producing energy).

B. There Is No “Urgent Need” For Expedited Expansion Of Bid Mitigation In The CAISO Markets

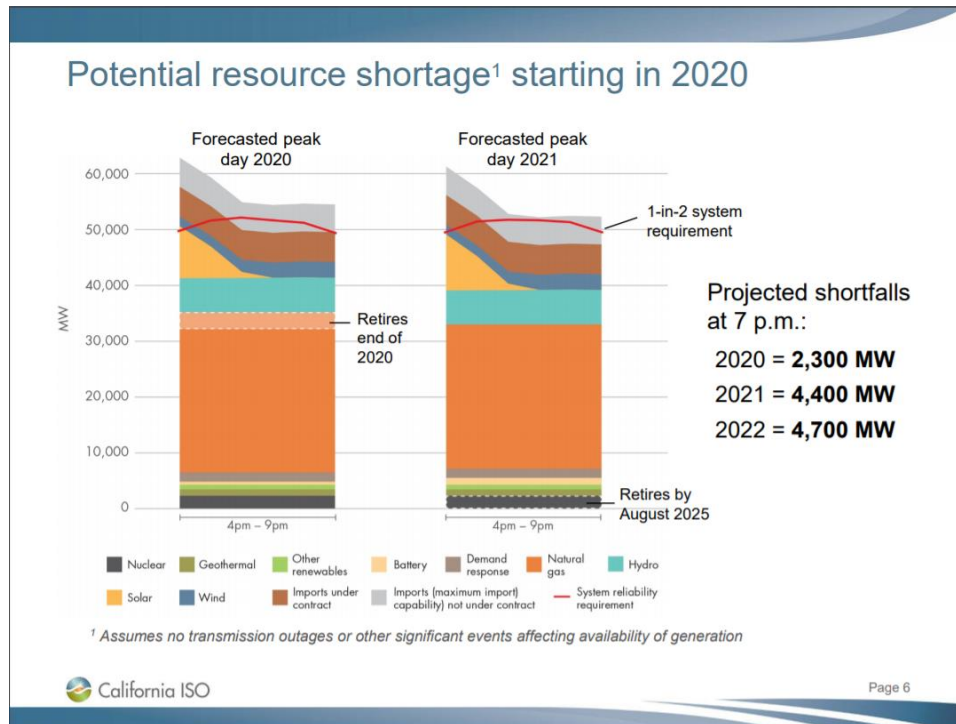
Calls for CAISO to initiate a stakeholder process to develop new system market power mitigation measures effectively seek to elevate that effort over the already heavy slate of policy initiatives being pursued by CAISO and by stakeholders. While a departure from scheduled policy initiatives may be appropriate in certain circumstances, the CAISO analysis and other data clearly refute any claim that the CAISO markets are currently distorted by the exercise of seller market power at a system level. Indeed, CAISO’s analyses—including but not limited to its initial data analysis and its more recent price performance analysis—highlight the multiple interrelated factors shaping prices in CAISO’s markets, especially during critical peak net demand hours. In particular, it is now well-known that the CAISO BAA faces a very significant and growing capacity shortfall. The root causes of this shortfall include the substantial shortcomings of California’s current Resource Adequacy program, together with total market revenues that are well below the level needed to continue to attract new investment.

The chart below shows the annual comparisons, published in DMM’s annual reports, between the hypothetical spot market revenues of a new combined cycle generation facility and the annualized costs associated with such investment. Even assuming that a hypothetical new entrant receives capacity revenues equal to the CPM soft offer cap, total revenues would still fall far short of covering the annual revenues necessary to make such an investment worthwhile. Moreover, the total costs of clean capacity technologies may greatly exceed the costs shown below, which are derived from conventional fossil-fueled generation.



Against this general backdrop of market revenues that are insufficient to support new investment, adding new measures designed to reduce prices will only exacerbate the challenge of attracting new supply.

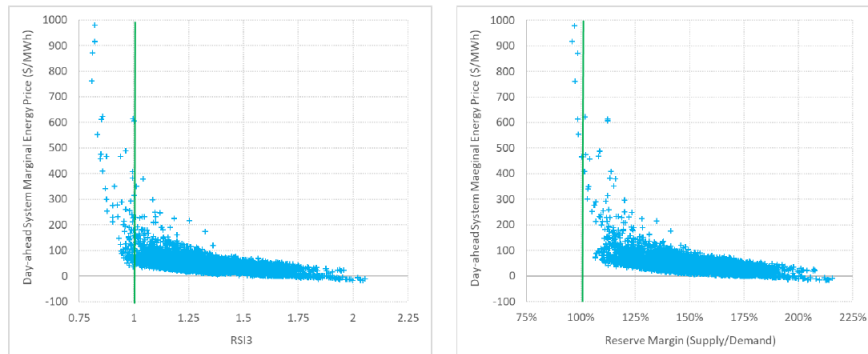
The “missing money” problem is not merely a *theory* that the current market does not encourage new supply; it is manifest in the very significant capacity shortfalls that the CAISO anticipates as early as next year. For example, the figure below was presented by CAISO management to the Board of Governors at the September 18, 2019 general session:



Source: <http://www.caiso.com/Documents/Briefing-Post-2020-GridOperationalOutlook-Presentation-Sep2019.pdf>

Not surprisingly, these capacity shortfalls result in limited supply in CAISO’s markets during individual days and hours. CAISO’s analysis documents a clear and strong association between these limited supply conditions and high prices on the CAISO grid:

In hours that the structural test fails, prices can be very high or very low, however our highest prices occur when supply reserves are extremely low



Source: <http://www.caiso.com/Documents/Presentation-SystemLevelMarketPowerWorkingGroup-Jul15-2019.pdf>

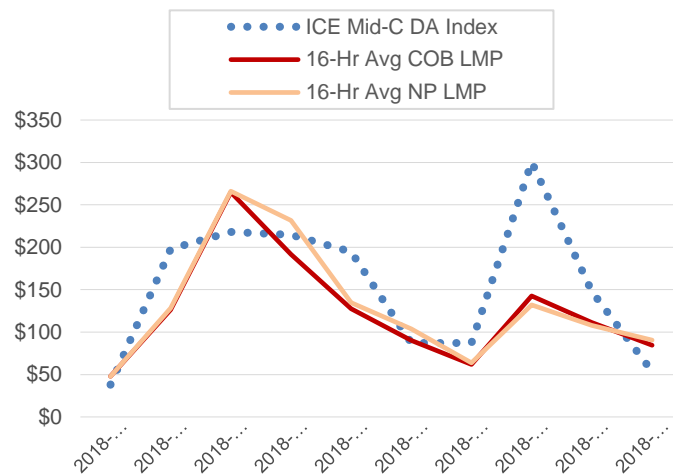
The challenges faced by CAISO operators are not limited to aggregate shortfalls of capacity, however. On a nearly daily basis, CAISO operators face challenges of balancing the large and uncertain changes in net demand, particularly in the early evening when solar output declines sharply even as demand for electricity remains high. CAISO has stated that it typically needs approximately 3,000 MW or more of flexible stand-by capacity to respond to these changes. These balancing reserves are not included in either the contingency reserves necessary for NERC reliability requirements nor in the quantity of regulating reserve procured by CAISO to balance load and generation within each 5-minute dispatch interval. The non-formalized nature of balancing reserves means that any analysis of prices and “reserve margins” likely understates the extent of tight supply conditions faced by CAISO, as the measured reserve margins fails to contemplate the CAISO’s large and growing need for balancing reserves to manage an increasingly unpredictable system grid with large and growing flexibility challenges.

The fact that the CAISO BAA experiences genuine supply scarcity even when it does not deplete contingency reserves is illustrated by the events of September 3, 2019, which were described by CAISO’s CEO at the September 18 Board of Governors meeting.⁵ The CEO Report and related comments described Summer 2019 as relatively mild, with peak load on September 3 of just over 44,000 MW. This is considerably lower than CAISO’s historic summer 2017 peak load of approximately 50,000 MW. Nevertheless, during the peak hours on September 3, the report describes operators scrambling to “seek additional imports from around the West” and noted that “[e]ven after doing so, the system had only 114 MW of capacity remaining before deploying

⁵ CEO Report, at 1. Available at: <http://www.caiso.com/Documents/CEOREport-Sep2019.pdf>.

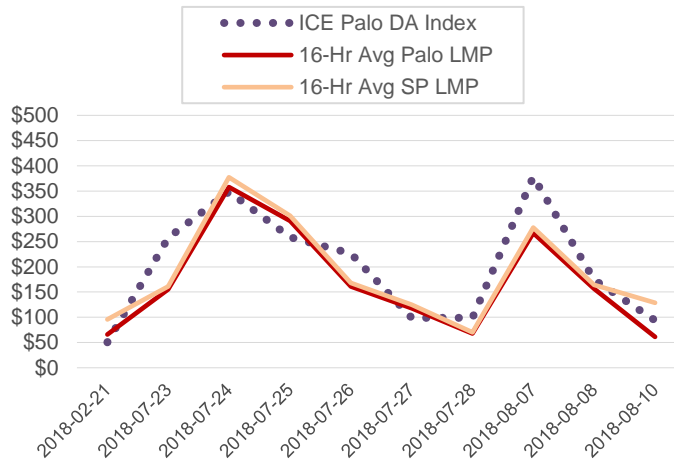
reserves during hour ending [HE]20 (8:00 p.m.).” Notably, throughout that critical HE20, OASIS data shows that the CAISO BAA was a net importer in the EIM of approximately 800 MW, implying that the CAISO BAA would not have been positioned to maintain reliability without access to those EIM imports.⁶

During periods of tight supply, the CAISO BAA faces growing competition from other potential purchasers in west to procure voluntary supply from resources located outside the CAISO BAA. Sellers of the output of external resources may therefore weigh the energy they offer into the CAISO markets against opportunities to make sales to other entities in the west. The relationship between the CAISO markets and the bilateral markets outside the CAISO BAA is evident in the prices of transactions in those markets. For example, Dr. Scott Harvey of the Market Surveillance Committee examined elevated CAISO prices occurring on ten days in 2018.⁷ In the charts below, Powerex has shown the CAISO day-ahead prices on those ten days along with the day-ahead bilateral market prices. The charts show that, on those ten days, the average CAISO day-ahead market price during the 16 on-peak hours were very similar to the bilateral market price index for on-peak energy delivered over those same hours.



⁶ This event also highlights that the EIM tests for resource sufficiency—which are intended to prevent “leaning”—are not being accurately applied to the CAISO BAA. Perhaps more problematically, this event also calls into question whether the CAISO BAA can credibly participate in a regional market that actually prevents leaning, as doing so would appear to expose the CAISO BAA to increased reliability risks.

⁷ Dr. Harvey’s August 19, 2019 presentation identifies the specific days and hours that were analyzed further on slides 17 and 33. Available at: http://www.caiso.com/Documents/SystemMarketPowerFTI-Presentation-Aug19_2019.pdf



The available data presents a compelling picture of the CAISO BAA experiencing substantial shortfalls in capacity and flexibility, requiring it to compete for limited voluntary supply from external resources, including during periods in which tighter conditions across the west lead to relatively high prices throughout the west—including but not limited to the CAISO BAA. The data presented to date does *not* provide any support for the claim that the exercise of system-level market power was a primary or even contributing cause to relatively high prices in the CAISO BAA. Consequently, none of the available data supports efforts to short-circuit the CAISO’s existing set of ambitious—and genuinely urgent—policy initiatives in order to focus on expanding bid mitigation.

C. Meeting CAISO’s Reliability Challenges Requires Getting Prices “Right”

Given the challenges facing the CAISO, it is critical that the CAISO markets result in prices that are capable of attracting the voluntary participation and development of resources needed to meet system needs. It is thus absolutely critical that prices in the CAISO market accurately and efficiently reflect system conditions—including potential reliability risks when supply is tight. CAISO prices that are below efficient and accurate levels will not result in lower-cost energy, but will simply make the CAISO market less successful in competing for the limited amount of uncommitted external supply. Moreover, the continued development and expansion of a broader regional market hinges on the CAISO’s ability to resist efforts to adopt rules that inefficiently elevate prices or that inefficiently lower prices, and instead seek market enhancements that lead to efficient prices in its markets.

As CAISO and stakeholders undertake a holistic review of price formation as part of exploring a regional day-ahead market, Powerex believes best practices should be explored that:

- Address the potential for the exercise of seller market power where it exists, including at the BAA level if appropriate;
- Address the potential for the exercise of buyer market power where it exists;
- Reflect scarcity conditions through prices that rise above marginal offer prices in a robust, gradual and orderly manner;

- Ensure the co-optimized market solution provides CAISO operators with the full suite of products and services necessary to safely and reliably operate the grid, thereby minimizing the potential for price distortions associated with out of market actions and interventions; and
- To the greatest extent possible, recover the costs of meeting demand through market-clearing prices, including by adopting fast-start pricing and exploring other enhancement pricing methodologies.

Appendix A: Powerex Comments on CAISO's Proposal

Powerex does not believe the CAISO's analyses support a conclusion that system-level market power is a material problem at this time. However, in response to CAISO's request for input on its initial conceptual proposal, Powerex provides the following comments.

1. Proposal to apply system-level market power mitigation to the CAISO balancing area.

Powerex believes that CAISO's initial proposal in this stakeholder initiative, at a conceptual level, is consistent with fundamental, broadly accepted price formation principles and reflects a balanced view of all stakeholder interests and priorities. CAISO's proposal correctly focuses on import constraints as the key condition that can effectively isolate the CAISO BAA from the rest of the west, and hence warrants closer examination of supply competitiveness within that constrained area. If internal supply is found to not be competitive under such import-constrained conditions, then CAISO proposes to mitigate supply offers *within* the constrained area. This conceptual approach emulates the manner in which bid mitigation procedures are currently applied in the EIM, when an EIM entity (or group of EIM entities) becomes effectively isolated from supply in the CAISO BAA.

Powerex believes there is merit in further exploring CAISO's proposal for defining the conditions in which the CAISO BAA is deemed to be import constrained. There is intuitive appeal in basing this determination on the three major interties (COB, NOB and Palo Verde). However, the CAISO's proposal of applying mitigation to external resources that can be delivered on other paths may have material unintended outcomes, which need to be more fully explored.

2. Proposal to only apply system-level market power mitigation to the real-time market.

Powerex sees the logic in the CAISO's proposal to focus its initial exploration of a potential system market power mitigation proposal on the real-time market. A phased approach, if and when the CAISO moves forward, seems prudent for a new enhancement, and implementation in real-time would provide for comparable treatment between the CAISO BAA and EIM entity areas. But given the potential for unintended outcomes, and the lack of similar approaches in other RTOs, significant additional analysis would be necessary before moving forward.

3. Proposal to consider interactions with the energy imbalance market.

A potential interaction with the EIM appears to arise from the CAISO's proposed simplification for identifying when the CAISO BAA is import-constrained. To the extent the simplified definition still enables a subset of external resources to serve load in the CAISO BAA, CAISO appears to propose mitigating those external resources. Powerex believes this aspect of the proposal would likely be problematic and may face significant stakeholder opposition. Powerex believes that further examination is necessary, as any such mitigation of external resources would indicate the simplified definition of when the CAISO BAA is "import-constrained" is producing inaccurate results.

4. Competitiveness evaluations and economic import offers

Powerex generally views the CAISO's proposal to apply the three-pivotal supplier test for resources capable of relieving a binding import constraint as consistent with its existing competitiveness assessment. Powerex does suggest further examination of the details regarding how this test is performed, including measures to more accurately reflect supply inflexibility, or supply associated with an entity that does not benefit from higher clearing prices (*e.g.*, entities with a net short real-time price exposure). Consideration may also be given to whether the real-time competitiveness assessment should be based on total supply and demand, or on incremental supply and demand in real-time only. Finally, since these are refinements to the real-time market power mitigation framework that applies to all EIM entity areas, Powerex believes it is an appropriate opportunity to implement a structural test prior to mitigating resources in EIM entity areas, rather than the current approach that automatically triggers mitigation when an EIM area separates from the CAISO BAA (*i.e.*, without evaluating supply competitiveness).

5. Potential measures the CAISO could take and likely market effects.

System market power concerns are only one aspect of price formation, and cannot be viewed in isolation or prioritized over other price formation concerns. Instead, CAISO's efforts in this initiative must be viewed as part of a broader effort ensure accurate and efficient prices, including prices that reflect the CAISO BAA's large and growing shortfall in procuring the energy, capacity and flexibility to meet its needs.

A comprehensive price formation initiative could potentially include:

- Mitigation of offer prices within a BAA when that area is functionally import constrained and where internal supply is deemed to not be structurally competitive, as conceptually outlined in CAISO's conceptual presentation;
- Potential consideration of different pricing measures applicable to resources that voluntarily accept a must-offer obligation, such as resources under Resource Adequacy contracts;
- Robust scarcity and shortage pricing, which results in market clearing prices that robustly but gradually rise above the variable cost of the marginal resources—as required by industry best practices for price formation—accurately reflecting “scarcity” as occurring when CAISO operators are in need of *any* type of additional supply, not only when it depletes contingency reserve below levels required under NERC standards;
- Fast-start pricing, to more accurately reflect the cost of serving load, particularly during peak hours and/or high ramping hours;
- Fixing EIM resource sufficiency concerns applicable to the CAISO BAA to remove supply that is not real and/or capable of performing, in order to establish a level playing field for all EIM participants;
- Strengthening incentives to ensure sufficient forward contracting of capacity, flexibility and energy;

- Removing roadblocks to the use of import capability to support additional forward contracting from external resources; and
- Minimizing out-of-market procurement or operator actions by procuring all necessary supply through co-optimized market processes and at market-clearing prices.

In addition to the tailored approach to system market power that CAISO has advanced here for further discussion, Powerex supports the CAISO exploring and undertaking a broader array of enhancements on a comprehensive basis as part of its regional market design efforts.