

**Comments of Powerex Corp. on  
Extended Day-Ahead Market  
Foundational Workshop**

Submitted by	Company	Date Submitted
Raj Hundal 604.837.2500	Powerex Corp.	December 8, 2021

Powerex appreciates the opportunity to respond to topics raised in CAISO’s “Common Design Principles and Concepts” paper and related November 12, 2021 Extended Day-Ahead Market Foundational Workshop (“Workshop”). The comments below set out what Powerex believes to be five critical considerations at this “foundational” stage in designing a “potential Extension of the Day-Ahead Markets (EDAM) to the EIM Entities.”

- There is broad support across the West for developing a day-ahead organized market with hourly granularity
- A regional day-ahead market must achieve a “critical mass” of participation to succeed
- The benefits of a day-ahead organized market—both to subregions and to individual participants—will hinge on key market design elements, which must be carefully crafted to improve outcomes over existing wholesale trade activity
- The EDAM “foundational” process has lacked the broad engagement necessary to achieve critical mass
- Key EDAM “Principles and Concepts” must be further honed with input from a broader stakeholder base before initiating more detailed working group discussions

**There Is Broad Support Across The West For Developing A Day-Ahead Organized Market With Hourly Granularity**

The past several years have brought a groundswell of support for frameworks that can achieve reliability, environmental and economic benefits through closer coordination between entities across the west. First, the Western EIM demonstrated the ability of organized markets to realize **operational benefits** by unlocking the **energy diversity** of real-time variations in load and renewable output across a wide geographic footprint, and balancing the net energy fluctuations from the lowest-cost resources. More recently, regional entities have come together to develop the Western Resource Adequacy Program (“WRAP”) to realize future **investment savings** while maintaining reliability by unlocking **capacity diversity** across a wide geographic footprint on a season-ahead forward timeframe.

The development of a day-ahead organized market with hourly granularity is broadly regarded as the logical next step in the evolution of wholesale electricity markets across the west. There are substantial potential benefits from more efficient day-ahead scheduling of resources each hour across the day, reducing or eliminating “pancaked” transmission hurdle rates that prevent otherwise-economic transactions, and more efficiently utilizing available transmission capability.

A day-ahead organized market spanning a broad geographic footprint will help enable the reliable and cost-effective integration of the large amount of renewable resources needed to achieve a key goal within the region: the deep de-carbonization of the western grid.

### **A Regional Day-Ahead Organized Market Must Achieve A “Critical Mass” Of Participation To Succeed**

The potential benefits of a day-ahead organized market have been the subject of multiple analyses. The recent “State-Led Study” estimated total production cost savings of \$85-\$700 million per year<sup>1</sup>; the 2019 EDAM Feasibility Study projected total production cost savings of \$119-\$227 million per year.<sup>2</sup> The broad range of potential outcomes in these two studies reflects the significance of the assumptions regarding the level of market participation of generation, load, and transmission, as well as other assumptions related to existing market activity. Furthermore, the specific market design choices of a future day-ahead organized market will have a profound effect on actual market outcomes and the realized net benefits (or net losses) experienced by each participant and sub-region relative to the status quo.

Notwithstanding the broad range of study assumptions and results, realizing the highest possible production cost savings will require a day-ahead market that achieves “critical mass” in two key respects:

- **Maximizing transmission** capability available to support day-ahead market transactions; and
- **Maximizing participation** by generating resources and loads that transact in the day-ahead market.

The challenge, however, is that transmission capability is already actively used to support day-ahead transactions arranged on a bilateral basis; and a large volume of trade already occurs in the bilateral markets. That is, achieving the benefits of a day-ahead organized market will require encouraging transmission capability to be made available to the organized market instead of using it to support day-ahead and real-time bilateral trading; and it will require encouraging generators and load-serving entities to transact in the organized market instead of the bilateral markets.

### **The Benefits Of A Day-Ahead Organized Market—Both To Sub-Regions And To Individual Participants—Will Hinge On Key Market Design Elements, Which Must Be Carefully Crafted To Improve Outcomes Over Existing Wholesale Trading Activity**

The volume of wholesale bilateral transactions that occur today outside of the CAISO Balancing Authority Area (BAA)—and that will largely be replaced by a day-ahead organized market—is very large. As shown in the chart below, there is nearly 400 million MWh of interchange *between*

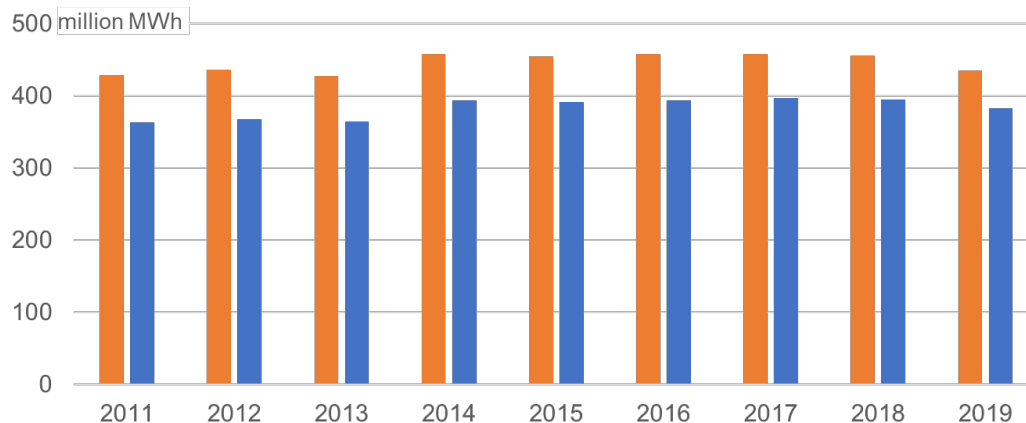
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<sup>1</sup> “The State-Led Market Study,” (July 2021) at pp. 72-73. The cited range is for “Adjusted Production Cost Benefits” under the “Two Market A Day-Ahead” and under the “One Market RTO” scenarios. The range of production cost benefits to entities outside of California is \$21-\$429 million per year. Available at: <https://www.energystrat.com/s/Final-Roadmap-Technical-Report-210730.pdf>.

<sup>2</sup> “Extended Day-Ahead Market: Feasibility Assessment” (October 2019) at 19. The presentation provides aggregate production cost savings for the entire assumed EDAM footprint; the benefits for entities other than the CAISO are not provided. Available at: <http://www.caiso.com/InitiativeDocuments/Presentation-ExtendedDay-AheadMarketFeasibilityAssessmentUpdate-ElMEntities-Oct3-2019.pdf>.

BAAs outside of the CAISO, as well as over 67 million MWh of interchange with the CAISO BAA. The actual volume of existing activity is even greater if one were to consider wholesale transactions *within* BAAs.

**Figure 1. Total Inter-BAA Exports And Imports For WECC BAAs Other Than CAISO**



Source: WECC *State of the Interconnection*, Interchange.

Even looking solely at “interchange” as a rough approximation of transaction volume, and using \$50/MWh as a rough approximation of value, it is reasonable to conclude that at least **\$20 billion** of wholesale electricity trade currently occurs on an annual basis in the west outside of the CAISO, under the existing bilateral market and OATT scheduling frameworks. This electricity trade occurs on both a forward and day-ahead basis; meaning that the structure and design of a future day-ahead organized market will *directly* define the products and prices traded day-ahead, and will also *indirectly* determine (or at least greatly influence) the products and prices transacted in the forward markets.

The fact that a day-ahead organized market will displace a large amount of the existing bilateral trading activity in the region sharply distinguishes the consideration of a day-ahead organized market from the considerations that have driven participation in the Western EIM. The Western EIM enabled sub-hourly trading in real-time where no (or very little) such trading had previously occurred. And the Western EIM was designed to utilize transmission capability that was largely “left over” after transmission customers had scheduled on their transmission rights. Thus, the benefits of the Western EIM have been based on enabling *additional* activity beyond what was already occurring, rather than on shifting or displacing existing activity.

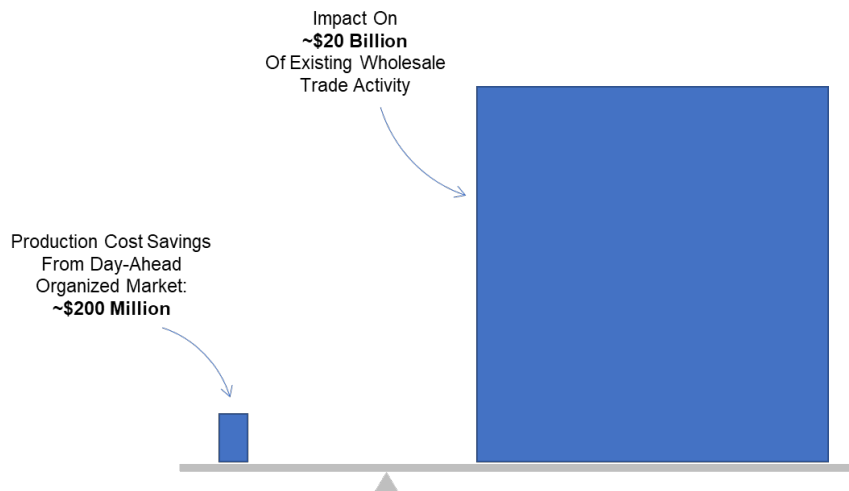
In stark contrast to the Western EIM, a day-ahead organized market will largely *replace* the trading that already occurs on a bilateral basis, and has the potential to *fundamentally alter* transmission scheduling rights and revenues under the region’s long-established OATT framework. Whereas the Western EIM was able to move forward merely by being “better than nothing,” a day-ahead organized market will only be able to move forward if a critical mass of western entities determine that it offers a material improvement over what exists today.

	Western EIM	Day-Ahead Organized Market
<b>Displaces bilateral transactions?</b>	<b>No.</b> <i>There is <b>virtually no</b> sub-hourly trading in bilateral markets; so EIM trading is <b>in addition</b> to bilateral trades.</i>	<b>Yes.</b> <i>Electricity is <b>actively traded</b> in day-ahead bilateral markets. Organized market trading will be largely <b>instead of</b> bilateral market transactions.</i>
<b>Displaces OATT transmission use?</b>	<b>No.</b> <i>EIM transfers are enabled primarily by transmission capability "<b>left over</b>" after transmission customers have an opportunity to schedule on their rights.</i>	<b>Yes.</b> <i>Transmission will need to be made available to organized market <b>instead of</b> being used to schedule deliveries under OATT framework</i>
<b>Threshold for positive net benefits:</b>	Needs only to be " <b>better than nothing</b> ," due to minimal impact on existing activity	Must be shown to be " <b>better than what we already have</b> ," since it will largely replace existing framework

A day-ahead organized market must therefore be evaluated not primarily on its potential to realize new benefits from additional wholesale transactions, but on its potential impact on the (far larger) volume of existing transactions, which it will largely replace. Moreover, this needs to be evaluated not only on aggregate, but for each entity and sub-region, as there is the ability for a significant shift in the value of trade between differently situated entities and sub-regions in the west.

### A Day-Ahead Organized Market Will Create New Transaction Opportunities *and* Impact Existing Transaction Activity

*Entities must consider both elements to ensure ratepayers benefit*



If a material number of entities in the west perceive that their ratepayers stand to lose more than they stand to gain by participating in a particular day-ahead organized market, then that organized market may fail to achieve the critical mass upon which its success depends.

### **The EDAM Foundational Process Has Lacked The Broad Engagement Necessary To Achieve Critical Mass**

As entities outside the CAISO explore options for developing and participating in a multi-state day-ahead organized market, it will be valuable to be able to consider a variety of approaches. The most durable solution will be a market whose participants have joined after concluding its design best addresses their needs and interests, rather than because there was no viable alternative in the near term. Powerex therefore welcomes the re-launch of the CAISO's EDAM initiative, as one potential option for a day-ahead organized market that includes participation outside of California.

The CAISO re-started its EDAM initiative by holding a series of private invitation-only discussions with California load-serving entities and a limited number of external entities. CAISO has stated that these discussions identified common ground on a set of high-level principles, which were published in October. The CAISO's approach was understandable as a "proof of concept" that there could be *some* agreement, between *some* entities, on at least *some* topics. But Powerex believes it would be a mistake to portray the outcome of these private discussions as the settled core principles of a western day-ahead organized market that will attract the broader participation needed to be successful.

As was illustrated by the questions raised at the workshop, the currently-identified EDAM "core principles" do not reflect the perspectives of several key external stakeholders. For instance, the private re-launch of discussions largely excluded the entities that operate and/or market the output of coordinated hydroelectric systems in the Northwest, and also excluded several of the largest transmission providers in the west. As a result, and as evidenced by the discussion at the workshop, there remain significant differences in perspectives on foundational, gating issues, including:

- Governance, decision-making, and oversight;
- The definition of "leaning," and whether it should be prevented;
- How prices should be calculated; and
- How congestion revenue will be allocated.

Powerex believes that marching forward into detailed working group discussions on how to *implement* market design details based on the published EDAM principles is premature, as the initial work has not yet been undertaken to identify the principles that will actually garner the broad support necessary for a day-ahead organized market to be successful. That is, rather than seeking to "sell" the EDAM vision of the CAISO, California load interests, and a small subset of external entities to the rest of the west, Powerex believes CAISO's next step must be to expand the group of entities participating in a robust high-level conversation of core principles. Identifying a coherent set of broadly-supported principles should precede asking stakeholders to invest significant resources in working groups to develop specific details around those principles.

## **Key EDAM “Principles And Concepts” Must Be Further Honed With Input From A Broader Stakeholder Base Before Initiating More Detailed Working Group Discussions**

The Workshop highlighted divergence of views surrounding several of the key principles. The working groups are not an effective forum for bridging the gap on high-level principles. Indeed, proceeding with resource-intensive working groups before identifying a core set of broadly supported principles merely delays the point in which core differences on foundational governance and market design principles must eventually be resolved, and creates the potential for substantial effort to be squandered in the meantime.

Powerex believes it is vital for the success of an EDAM that the core design principles should be re-visited at this stage in the context of a full stakeholder discussion that is inclusive, open and transparent. Below are examples of four key areas where Powerex believes the existing EDAM principles will not achieve broad support:

### 1. Governance

The core question of governance is whether EDAM will be “CAISO’s market” with others invited to join, or whether it is a CAISO-facilitated effort to identify a framework for a western day-ahead organized market that meets the needs of a broad, multi-state footprint. Powerex believes that the latter is the only way to achieve the critical mass needed to realize the full potential benefits of an EDAM. But Powerex also believes that the historical market design, rules, and perspectives of the current CAISO day-ahead market is not a framework that will be workable for a critical mass of entities across the west. This raises perhaps the most important question in this stakeholder process: how can EDAM be expected to meet the needs of external entities if the design, implementation, and oversight remain under the existing CAISO governance structure, which is designed (and mandated) to serve the interests of California ratepayers?

The EDAM principles do not mention governance, yet its importance was recognized at both the October and November workshops. The CAISO’s comments indicate it believes that the recently-adopted *limited joint authority model* for the Western EIM will be a satisfactory way forward, but it is unclear whether this view is shared by any external entities. Clarity is also needed around not just how the EDAM will be overseen once it is up and running, but how the initial EDAM straw proposal and subsequent revisions to that proposal will be determined.

The time to articulate high-level governance principles is now, so potential EDAM participants can have confidence both in the process for designing the EDAM and in its ongoing operation and oversight. Notably, some potential EDAM participants are from states that may be required to join or to explore joining a Regional Transmission Organization at some future date. It is readily apparent that a comprehensive overhaul of CAISO’s mandate and governance would be required for it to evolve into a multi-state RTO. In Powerex’s view, prolonged delay in addressing governance concerns means that EDAM participation is likely to be a “dead end” for entities that seek to ultimately join an RTO. Proceeding with EDAM without substantively addressing governance not only carries uncertainty that CAISO governance reform will not happen, but it may make it even less likely to happen, as the remaining benefits that would flow from such reform (e.g., transmission consolidation) to California interests will be smaller than they are today (since it will already enjoy the benefits of a regional day-ahead and real-time market without having to fundamentally reform the CAISO’s governance structure).

## 2. Resource Sufficiency And Preventing “Leaning”

The current EDAM principles contain two internally inconsistent elements:

1. EDAM will not intrude upon any entity’s forward resource planning or resource adequacy decisions; and
2. Each entity must be resource sufficient prior to the day-ahead operation of EDAM.

At the workshop, Powerex asked that these two elements be reconciled by expressly requiring each EDAM entity—including the CAISO—to committing to procuring any additional supply needed to bridge the gap between the entity’s forward resource procurement and its EDAM resource sufficiency requirements. The question was deferred to the working groups.

The current EDAM principles also indicate a view that excluding resource-deficient entities from EDAM participation may reduce the benefits of EDAM. Powerex would agree that *improperly* restrictive or *inaccurate* metrics of resource sufficiency could undermine EDAM benefits. But there should be no equivocating that any entity that is objectively and accurately identified as resource deficient is improperly leaning on the capacity investments made by other EDAM participants.

These are not detail-level issues that can be relegated to working groups; they define the core requirements and expectations of participants in EDAM. Clarity on these aspects of the EDAM vision is particularly important given the challenges in implementing the same core “no leaning” principle in the Western EIM.

## 3. Price Formation Practices

As discussed above, BAAs outside of the CAISO currently engage in approximately \$20 billion of wholesale electricity imports and exports each year, with transaction details specified and priced under the existing bilateral market framework and delivered under existing OATT transmission reservation and scheduling practices. A day-ahead organized market such as EDAM will impact all of this activity, in at least two ways.

- It will directly replace day-ahead bilateral transaction activity; and
- It will drive the value of forward transactions that settle at the day-ahead price.

All of the benefits associated with a day-ahead organized market are based on more efficient use of physical generation resources; none of the benefits are predicated on shifting the value of wholesale transactions, either to terms more favorable to sellers or more favorable to buyers.

But any transition to a day-ahead organized market will entail replacing transactions under terms negotiated bilaterally between parties with sales and purchases at market clearing prices calculated under formulas pursuant to a tariff. How those prices are calculated can make an enormous difference to the market outcomes, and to the impact on the value of sales and purchases that currently occur in the west, including, but not limited to, imports and exports to and from the CAISO BAA.

Powerex appreciates that the CAISO and the current EDAM principles recognize the central importance of price formation practices to the anticipated benefits of an EDAM. But paradoxically, price formation issues will not be within the scope of the EDAM stakeholder process at all. Instead, the CAISO plans a separate stakeholder process to discuss these topics. Powerex

welcomes the CAISO's willingness to engage in this discussion, but it disagrees that price formation issues can be addressed entirely separate from the rest of EDAM. Nothing could be more central to an external entity's evaluation of the potential benefits and costs of joining EDAM than knowing how the prices in that market will be calculated.

Powerex is also concerned that CAISO staff characterized the CAISO's current market design rules as the "obvious starting point" for a discussion on price formation practices. This, too, seems incompatible with identifying a western day-ahead organized market framework that is workable for a critical mass of external entities.<sup>3</sup> Powerex urges the CAISO to expressly include price formation within the scope of the EDAM stakeholder process, and for the starting point of that discussion to *not* be the CAISO's existing design, but rather to begin by considering both FERC's price formation policies and the full spectrum of market design best practices from other ISOs and RTOs.

#### 4. Equitable Allocation Of Congestion Revenue

A final area where the current EDAM principles need clarification is the issue of allocating the value of transfers on constrained interties. Under an organized market design, when transfers between BAAs are limited by available transmission, the price paid in the exporting BAA is generally lower than the price paid in the receiving BAA. The difference is collected by the market operator.

Coordinated interties between BAAs generally represent investments in transmission facilities funded by ratepayers on both sides of the interface. Congestion revenue collected by the market operator should, as a general principle, be returned to the ratepayers that fund the associated transmission facilities. The EDAM principles appear to reflect this general principle, but only for transfers between BAAs *other than the CAISO*. For transfers involving the CAISO BAA, Powerex understands the EDAM principle to support returning all of the congestion revenue to the ratepayers on the "side" of the intertie that constrains "first." CAISO contends this is intended to avoid distorting "revenue adequacy" or creating "surpluses and deficits from current practices[.]"<sup>4</sup> But this presumes that the CAISO's existing approach to congestion revenue on coordinated interties is workable in the context of a multi-state regional market; the numerous disputes on this issue over the past decades indicate it is not. This approach seems particularly unworkable in light of the fact that which "side" of a coordinated intertie constrains first—and hence which ratepayers will receive 100% of the value of that transmission—will be determined by models maintained and administered by the CAISO itself.

Powerex believes that principles related to the allocation of congestion revenues must be applied equitably to all entities. While the *manner* in which those principles are given effect in each instance may well differ, the goal should be uniform: to return the value of transmission congestion to the entities that fund the associated transmission facility. The CAISO's discussions with California load-serving entities and a small number of external stakeholders resulted in a design principle that elevated preserving the existing approach for interties with the CAISO BAA.

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<sup>3</sup> CAISO's subsequent written responses state that "There does not have to be a starting point one way or the other." However, the CAISO appears to intend to seek input on these issues only from other areas of the CAISO itself (*i.e.*, its DMM and its MSC). That is, it appears that individual stakeholders will bear the burden of providing any non-CAISO perspective on these critical issues.

<sup>4</sup> CAISO Response To Stakeholder Questions, at 19.



Powerex believes this issue must be revisited in order to identify the principles that can lead to an EDAM design that is workable for a critical mass of external entities.

## **Summary**

Powerex supports the CAISO's efforts to re-start the stakeholder discussion on EDAM. The west has taken unprecedented steps toward increased wholesale electricity coordination, and a day-ahead organized market is the right next step. For EDAM—or any day-ahead organized market—to succeed, it will be necessary to attract a critical mass of participants, which means the market must be designed and governed in a manner that is broadly workable for a diverse range of differently-situated entities across the west.

The current EDAM principles reflect a high-level initial agreement that appears to have the support of a subset of external entities. This provides an initial indication that further discussions are worthwhile, but nothing in the process of developing those principles suggests that they will be the right set of principles around which a successful EDAM can be built. Rather than positioning the current EDAM principles as *the* pillars of the CAISO's EDAM platform, Powerex encourages the CAISO to broaden the discussion of those principles beyond the initial group, to include the full complement of stakeholders and potential EDAM participants. Material differences remain on key principles which, if not resolved now, have a high likelihood of becoming major obstacles down the road.