

**Extended Day-Ahead Market
Principles and Elements
of the EIM Entities**

Background

- The introduction of the Western Energy Imbalance Market (EIM) in 2014 was a significant step in the development of wholesale energy markets in the West, and marked a major paradigm shift from the typical bilateral trading that occurs outside of the California Independent System Operator (CAISO) markets towards a regional organized market framework.
- The voluntary EIM has enabled participants to reduce costs for their customers, and advanced environmental objectives by providing a means to more effectively deploy resources in real-time in response to changing system conditions. EIM has also brought intangible benefits that have strengthened system reliability through improved operational awareness and the market's ability to anticipate changes in loads and resources.
- While successful, the EIM is generally limited to the relatively small pool of potential transactions that can be arranged in real-time using the residual capabilities of resources that are largely committed further in advance, according to each participant's individual operating practices. Most participants rely on the day-ahead market timeframe to make the majority of their resource commitment decisions, to finalize arrangements for natural gas or other fuels, and to execute short-term wholesale energy transactions.
- Therefore, the exploration of a voluntary, extension of EIM to a regional day-ahead market (EDAM) presents a significant opportunity to build off the success of the EIM and to pursue additional economic and environmental benefits for market participants and their respective customers in regions across the West. EDAM should extend the voluntary approach that has been successful in attracting participants to the EIM and be designed to meet the needs of the CAISO and EIM entities across the region.
- The EDAM Feasibility Assessment identified a range of potential aggregate gross benefits of \$119 to \$227 million annually, if the market is able to attract broad participation across the West. The Feasibility Assessment, however, is merely a directional indicator of possible aggregate benefits, and relies on the market's ability to attract broad participation across the West. It is neither a precise estimate of aggregate benefits, nor does it inform whether there is a positive business case for each individual EIM Entity to participate in EDAM. Further, it does not identify the extent to which

economic and environmental benefits may be reduced should only a limited number of EIM Entities elect to participate in EDAM.

- The EIM Entities therefore emphasize that there is not yet a commitment to move forward with implementing EDAM. Rather, the EIM Entities wish to work with the CAISO and stakeholders to develop a comprehensive market design proposal that will allow the EIM Entities to evaluate their own individual expected benefits and costs associated with participation in a potential EDAM.
- An appropriate governance framework with oversight and structure tailored to the goals of EDAM is critical to ensuring that a multi-state day-ahead market is designed and operated in a manner that serves the interests of consumers, market participants, and regulators across the EDAM footprint.
- In addition to governance, there are several critical market design topics - including resource sufficiency, transmission access and compensation, price formation, and greenhouse gas program application - that have the potential to greatly impact not only the magnitude of total regional benefits that may be achieved, but also the distribution of those benefits between and among participating EIM Entities and the CAISO. Only after all key market design choices have been determined, through a comprehensive stakeholder process, can each party perform its own individual evaluation of its potential *net benefits* and whether EDAM provides a market platform to move forward.
- The EIM Entities agree that any new market design must consider impacts to grid reliability. EDAM is no different and must be designed in such a manner to not degrade reliability and if possible, create ways to enhance it. Features such as resource sufficiency requirements, better transmission utilization and reduced renewable curtailment will support this requirement.
- The EIM Entities recognize that developing a workable and equitable EDAM, as an optional, incremental addition to the EIM, will be a challenge. We hope to build upon attractive elements of the EIM to enable this next incremental step forward. A successful regional day-ahead market should allow voluntary entry and ongoing participation from a diverse mix of EIM Entities across the West and bring additional benefits to the existing customers of CAISO services.
- Although EDAM presents an opportunity to build from the success of the EIM, the core design elements of EDAM must be considered carefully and not simply extended from the EIM or from the CAISO's existing day-ahead market design. Key market design choices must effectively balance a variety of potentially competing interests and priorities, ultimately providing an opportunity for participation in a well-functioning

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competitive market. This can only be achieved through a comprehensive evaluation and resolution of numerous critical market design topics through a robust stakeholder process. The EIM Entities welcome the opportunity to work with stakeholders and the CAISO in this endeavor.

1. Governance and Oversight

- An appropriate Governance structure tailored to the goals of EDAM is critical to ensuring that a multi-state day-ahead market is designed and operated in a manner that serves the interests of consumers, market participants, and regulators across the EDAM footprint. The potential size and importance of a regional day-ahead market and its impact on the broader wholesale energy marketplace cannot be understated. Unlike the EIM, with its relatively small pool of real-time transactions, an EDAM could ultimately facilitate a vast amount of short-term energy transactions, representing a much larger share of the resources and loads across the west, while also potentially reducing existing bilateral market activity and opportunities.
- EIM Entities, their customers, CAISO market participants, and applicable state regulators must have confidence in a sufficiently independent governance and oversight structure that is able to represent and balance a diverse range of interests and priorities covering the scope of the day-ahead and real-time market consistent with applicable law.
- The current structure and delegated authority model for the EIM Governing Body provides a logical framework on which to build governance for a broader Day-Ahead Market. The CAISO has commenced a stakeholder process to explore improvements to EIM governance. Consistent with its charter, the Governance Review Committee should also examine oversight of the EDAM.
- The EIM Entities also wish to consider options that would establish an independent market expert to provide additional perspective on the complex and technical issues that the EDAM governing body would oversee. An independent market expert would supplement existing market monitoring and surveillance by providing a fresh and independent perspective to market design and operations, reporting directly to the EDAM governing body. This independent market expert would be particularly important in providing insight, guidance and technical support to the EDAM governing body on critical market design issues and market outcomes that may impact the distribution of benefits between different regions and/or market participants.

2. Resource Sufficiency

- Participation in the EDAM should not modify state or local control over long-term resource adequacy planning and integrated resource planning, or any other aspect of state or local generation planning and certification.

- A key design principle of the EIM design is that each entity must be able to stand on its own and not lean on the market footprint as a whole, before being granted the opportunity to trade and reap mutual efficiencies. The EIM Entities envision a day-ahead resource sufficiency (RS) test to promote system reliability by ensuring all participants in the EDAM footprint are held to a common standard that measures whether they have each secured sufficient energy, capacity, flexibility, and supporting transmission to meet a variety of potential real-time needs, with a high level of confidence.
- A well designed day-ahead RS framework with a sufficiently high standard is vital for two reasons:
 - First, an important benefit of EDAM is to achieve cost savings through a more efficient day-ahead commitment of generating units, including the displacement of internal unit commitments within one Balancing Authority Area (BAA) when more economic resources can be committed in other BAAs instead. For this reason, it is imperative that EDAM transactions can be relied upon to meet firm load without any elevated risk of curtailment due to resource shortfalls in other BAAs within the EDAM footprint.
 - Second, RS ensures fairness by preventing EDAM participants from “leaning” on the capacity and/or flexibility investments made by other EIM Entities and other regions, without explicitly compensating and contracting for it, while providing each entity with equitable access to diversity benefits.
- As it is developed, an RS test should measure whether each entity has taken sufficient steps ahead of the day-ahead market timeframe to ensure it has access to sufficient resources to serve its demand and balance its system, and be consistently applied to all participants.

3. Transmission

- Outside of CAISO, transmission customers generally take service under an Open Access Transmission Tariff (OATT) at rates that are defined by the transmission provider providing service over its facilities – an approach that is very different from transmission service within the CAISO BAA that is made available through the day-ahead and real-time markets, and for which costs are recovered using a transmission access charge applied to all load and export schedules.
- The EIM Entities believe that the EDAM must respect this existing framework. EIM Entities will continue as a Balancing Authorities and transmission providers with

responsibility to ensure reliability in their BAA and to administer their respective OATT (as may be voluntarily modified to facilitate EDAM services). Moreover, the EDAM transmission design should be reasonably compatible with existing market transactions through all market timeframes for purchases and sales, allow for continued participation in reserve sharing groups, and fully respect long-term transmission ownership rights.

- Participation in EDAM by either California or non-California utilities does not modify any existing processes for transmission planning or transmission siting. Regional and interregional transmission planning will continue under the established planning regions. EDAM may help inform transmission investment decisions, but these processes will continue independent of EDAM.
- Designing an effective EDAM transmission framework that is compatible with existing practices is a challenging task. On the one hand, many of the increased benefits of a centralized market depend on the ability for the market software to efficiently seek out economic transactions – an effort that can be impeded by a lack of available transmission and excessively high transmission “hurdle” rates. On the other hand, eliminating all “hurdle” rates can create risks of reducing the revenues Transmission Service Providers (TSPs) rely on to recover the fixed costs of their transmission facilities, of creating “winners and losers” resulting from material transmission cost shifts between transmission customers, market participants, and regions, or of simply leading to less transmission being made available to the EDAM in the first place.
- The EIM Entities believe that there are, and urge exploration of, at least two frameworks to make available transmission to EDAM:
 - 1) Potential contribution of transfer capability by the EIM Entities as transmission providers: Incremental transfer capability provided directly by the TSP itself. In this case, the transmission provided is effectively a “new” sale of transmission service by the TSP rather than an allocation of existing rights for use in EDAM. This category of transmission would therefore be subject to some incremental and potentially uniform transmission rate across the EDAM footprint that would be respected within the market optimization and distributed to the TSPs providing the incremental transmission service.
 - 2) Voluntary contribution of transfer capability by OATT transmission rights holders: Conceptually similar to the “Interchange Rights Holder” approach in EIM, OATT transmission customers should be able to voluntarily contribute those rights to EDAM in exchange for receiving a fair allocation of congestion rents on the applicable path based on EDAM prices. Such contributions should include

transmission that the EIM Entities may use to meet EDAM RS requirements, or other transmission rights that the rights holder may choose to voluntarily make available to support additional EDAM transactions.

4. Price Formation

Like most markets, the majority of short-term energy transactions in the West are executed on a day-ahead basis. A successful EDAM is likely to result in EIM Entities replacing a substantial portion of their existing day-ahead bilateral transactions with EDAM transactions. Furthermore, the impact of day-ahead price formation practices extends well beyond the settlement of day-ahead transactions themselves: they also form the typical reference prices used in valuing and settling forward contracts. Accordingly, correct price formation practices are of critical importance.

- The price formation practices must result in just, reasonable, and equitable price signals that are acceptable to both buying and selling market participants across the footprint. Prices that are inefficiently depressed or elevated will result in material and inappropriate shifts in value between buyers and sellers, and between those regions with surplus energy, capacity, flexibility, or preferred environmental attributes and those regions that rely on short-term market purchases to displace higher-cost internal resources and/or balance their systems. Any price formation choices that are either inefficient or result in material inequities can limit the prospects for attracting broad regional support for an EDAM.
- CAISO, the EIM Entities, and stakeholders must carefully evaluate a variety of options and industry best practices related to price formation, particularly given that the CAISO's current approach to dispatch bids and calculate energy prices in the CAISO's existing financial day-ahead energy market (and its inclusion of virtual supply) differs from the prices for firm, capacity-backed energy products that characterize the bilateral day-ahead market in the rest of the west.
- The CAISO day-ahead market currently co-optimizes energy and ancillary services (e.g., capacity products). In addition, the CAISO has already initiated an exploration of modifications to its existing day-ahead market. This discussion will now need to take place in the context of a broader regional day ahead market and the diverse interests and priorities across the west.
- An evaluation of price formation options for EDAM should include:

- An exploration of fast-start pricing, including examination of the current approaches in western bilateral markets, CAISO markets, and other RTOs/ISOs.
- An exploration of scarcity and shortage pricing measures, including examination of approaches in western bilateral markets, CAISO markets, and other RTOs/ISOs.

5. Greenhouse Gas

- The EDAM framework for treatment of environmental attributes should be evaluated from a fresh perspective. EDAM should assign proper accountability through the accurate allocation of the costs and/or benefits associated with greenhouse gas emissions or environmental attributes preferred by individual jurisdictions. Failure to do so creates the potential for inefficient dispatches, improper resource attribution, and inappropriate shifts in GHG-related compensation from clean suppliers to emitting resources and energy marketers.
- Jurisdictions that have not adopted a greenhouse gas pricing policy should not be improperly affected, directly or indirectly, by carbon policies adopted by other jurisdictions.
- Renewable and non-emitting resources outside of jurisdictions with greenhouse gas programs should not be unfairly disadvantaged compared to renewable and non-emitting resources inside jurisdictions with greenhouse gas programs.
- Furthermore, the potential scope of greenhouse gas programs is likely to expand beyond California's borders as carbon policies are implemented or contemplated in a growing number of jurisdictions. The EDAM GHG framework must therefore be compatible with the policies of multiple jurisdictions, even if the specific regulations vary.

6. Conclusion

The EIM Entities look forward to engaging with the CAISO and stakeholders in the EDAM stakeholder process. This will be a significant and complex undertaking that could have profound consequences for the western wholesale electric market. The EIM has demonstrated the ability of an organized market in the west to achieve savings for customers. A properly structured EDAM can be an important, incremental means to capture additional environmental and economic benefits.