

## Stakeholder Comments Template

Submitted by	Company	Date Submitted
Edward G. Cazalet <a href="mailto:ed@temix.com">ed@temix.com</a> 408-621-2772	TeMix Inc.	August 10, 2015

### General Comments

TeMix respectfully suggests that this CAISO Proposal to centrally dispatch Energy Storage and Distributed Energy Resources (ESDER) and especially aggregations of ESDER will slow the adoption of ESDER and result in higher costs of integrating high penetrations of renewables and achieving carbon reduction goals as required by California policy.

TeMix has previously commented on these issues in formal comments to the CAISO <http://www.aiso.com/Documents/TeMixComments-ExpandingMeteringandTelemetryOptions-DraftFinalProposal.pdf> and in oral comments before the CASIO Board of Governors on July 16<sup>th</sup>, 2015.

The additional issues that are surfacing in this ESDER proposal are in line with TeMix’s previous comments to the CAISO. These issues demonstrate the complexity and futility of the CAISO centralized approach. Estimated “counter-factual” baselines required by the centralized approach for ESDER are an invitation to inefficiency, over or under payments, and market abuse. A properly designed decentralized approach would use only contracted baselines that are not estimated.

Separate meters for behind the meter ESDER that may be needed for participation in CAISO dispatches may cause more opportunity for market abuse and inefficiency.

The storage roadmap recognizes that storage must access multiple revenue streams from multiple sources to be properly compensated for the multiple services it provides. ESDER can provide services behind the facility meter, to the distribution operator, to other parties on the distribution grid, to other parties on the transmission grid, and to the CAISO. In this centralized approach it is not easy to decide when a distribution operator, the CAISO, or a third party should have dispatch control over ESDER.

The only practical and the best approach for most retail parties (customers, prosumers, storage, generation) on the distribution grid is for these parties to be treated as demand-side, self-dispatching, responsive parties. All that should matter to the CAISO is the net total load or supply scheduled into the CAISO grid at prices for buy and sell quantities tendered by the

CAISO. Distribution operators and other parties will also tender for services. ESDER can then self-dispatch in response to these tenders; the tender prices and associated quantities will convey to ESDER owner the reliability and economic benefits to the CAISO, distribution operators and other parties.

TeMix proposes that the CAISO simplify the products and interfaces from the CAISO to the retail parties on the distribution grid. The CAISO interfaces should be for primarily energy-only products (and perhaps options on energy) bought and sold at forward ex-ante prices. The prices would be conveyed by the CASIO as actionable buy and sell tenders to retail parties that are updated frequently with frequent feedback of accepted tenders (transactions) to the CAISO interfaces at p-nodes.

TeMix also proposes transactive retail tariffs for both energy and distribution transport. The retail energy would be transacted (buy and sell) at wholesale p-node spot and forward prices. The distribution transport product would be a two-way cost of service product where the transport prices are designed to recover more of the cost of services when the distribution grid or elements of the distribution grid are more heavily loaded in either direction. Forward retail subscriptions for both energy and transport will stabilize the customer bills and supplier revenues and support buy and sell price responsiveness to reduce new distribution investment and better integrate wholesale renewables and ESDER.

The following presentation gives a gives a high level view of this suggested decentralized Transactive Energy approach on the distribution grid and the interface to the transmission grid and the CAISO: [http://www.temix.net/images/PANC\\_April\\_21\\_2015\\_Presentation\\_-\\_Cazalet.pdf](http://www.temix.net/images/PANC_April_21_2015_Presentation_-_Cazalet.pdf). TeMix requests and opportunity to present this approach to CAISO participants and the CAISO at future face-to-face meeting for this ESDER initiative or a related initiative.

Some specific comments are below in the categories requested by this comment form.

### **Non-generator resources (NGR) enhancements**

Please provide your comments in each of the four areas of proposed NGR enhancement.

1. Update documentation on NGR to capture material and clarifications compiled for April education forums.

TeMix Comments: Please explain in the documentation how storage technologies are modeled in detail. For example for chemical battery technologies, how are non-linear losses vs. charge and discharge rates and state of charge (SOC) modeled, how are maximum rate of charge and discharge modeled vs. SOC and battery temperature or other variables, how are air conditioning and heating costs of storage modeled as a function of the dispatch. Or, if this level

of detail is not modeled by the CAISO how are storage owners assured that they are achieving an optimal dispatch from their point of view.

Please explain how the CAISO dispatch of storage will handle the following: In the next 5-minute interval a storage project is dispatched to charge at a very high price because the discharge price in a subsequent interval is even higher. However, if the actual price in that subsequent interval turns out to be very low or negative, how will the storage owner not lose money on this CAISO dispatch?

2. Clarify how ISO uses state of charge (SOC) in market optimization.

TeMix Comments: This question's focus on market optimization is confusing. What is being optimized? How can a storage owner be assured that a storage facility is being dispatched to maximize profits in competition with all other resources and price responsive end load.

3. Evaluate initial SOC as a submitted parameter in the day-ahead market.

TeMix Comments: This is just one of many parameters that would need to be submitted to a centralized day-ahead dispatch of a storage device adding to the complexity of the CAISO proposal.

4. Evaluate option to not provide energy limits or have the ISO co-optimize an NGR based on state of charge.

TeMix Comments: This approach is the closest to the responsive resource approach TeMix proposes. It begins to recognize the massive complexity of centrally dispatching large numbers of storage resources with different chemistries, different operational constraints, different SOC, different current battery temperatures, different heating and cooling needs, different capacity degradation to date, different rates of degradation as a function of battery cycling, and different other services provided to the distribution operator and end customers.

### **PDR/RDRR enhancements – alternative baseline methodologies**

Please provide your comments in each of the two areas of proposed enhancement.

1. Develop meter generator output (MGO) as a new ISO baseline methodology.

TeMix Comments: Any non-contracted baseline methodology is cannot provide proper incentives for performance and avoidance of manipulation.

2. Develop additional detail regarding the "ISO Type 2" baseline methodology (i.e., provision of statistically derived meter data) and document that in the appropriate BPMs.

TeMix Comments: No comment.

### Non-resource adequacy multiple use applications

Please provide your comments on each of the two non-RA scenarios the ISO has proposed to address.

Also, the ISO strongly encourages stakeholders to **identify and describe use cases** under each scenario (including diagrams of the configurations contemplated for these use cases), or issues not covered in these scenarios that should be addressed in this initiative.

1. Type 1: Resource provides services to the distribution system and participates in the ISO market. Question 1 – How do we manage conflicting real-time needs or dispatches by the distribution utility and the ISO? Question 2 – If distribution system and ISO needs are aligned, and the resource’s actions meet the needs of both, is there a concern about the resource being paid twice for the same performance? Under what situations is double payment a concern? How should we address this concern? Question 3 – Should any restrictions be on a DER aggregation providing distribution-level services? Would the distribution utility ever call upon a multi-pnode DER aggregation to address a local distribution problem?

TeMix Comments:

Any attempt to identify all of the possible current and future multiple use scenarios and then construct arbitrary administrative rules, priorities, side payments, and allocations of the resources to specific uses for specific periods of time will only add to the complexity and inefficiency of the proposal for CAISO centralized dispatch of ESDER. A decentralized proposal would remove this complexity and increase efficiency.

Question 1 – How do we manage conflicting real-time needs or dispatches by the distribution utility and the ISO?

TeMix Comments: This is reason enough to abandon the CAISO centralized dispatch approach that will become increasingly complicated for the CASIO to administer and for CAISO participants to cope with.

Question 2 – If distribution system and ISO needs are aligned, and the resource’s actions meet the needs of both, is there a concern about the resource being paid twice for the same performance? Under what situations is double payment a concern? How should we address this concern?

TeMix Comments: With a fully decentralized approach with competition, double payment is not a concern. With the CAISO centralized approach there will be a continued search for double payment situation, which will be costly and burdensome.

Question 3 – Should any restrictions be on a DER aggregation providing distribution-level services? Would the distribution utility ever call upon a multi-pnode DER aggregation to address a local distribution problem?

TeMix Comments: First, DER aggregations of offers into the CAISO are unnecessary in a decentralized approach; the CAISO needs only to receive the self-dispatched schedules of DER.

2. Type 2: Resource provides services to end-use customers and participates in the ISO market. The ISO has identified the following three sub-types (are there others?):

(a) DER installed behind the customer meter, such that flow across the customer meter is always net load;

(b) DER installed behind customer meter, such that flow across the customer meter can be net load or net injection at different time; and

(c) DER installed on the utility side of the meter, may provide service to end-use customers and participate in wholesale market.

Again, with a decentralized approach we don't need to ask about all possible sub-types. Case (a) is simply a special application of Case (b). In a decentralized approach, any party can buy and sell with any other party on the distribution grid or transmission grid. Thus, many use cases are possible. The CAISO proposals need to prepare for a transition to full retail competition where any use case for transactions on the distribution grid can occur.