



## **Submit comment on Revised straw proposal**

Initiative: Energy storage enhancements

### **1. Please provide a summary of your organization's general comments on the revised straw proposal presentation for this initiative:**

The California Energy Storage Alliance (CESA) appreciates the opportunity to provide feedback on the California Independent System Operator's (CAISO or ISO) Energy Storage Enhancements (ESE) Revised Straw Proposal. CESA recognizes the leadership of the ISO in addressing potential improvements to the modeling, treatment and optimization of storage assets.

Overall, CESA welcomes several of the ISO's clarifications regarding their proposals energy storage resource (ESR) participation pathway. While detail on the default energy bid (DEB) formulation for ESR assets is welcome, CESA considers that some of the inputs used for that calculation merit revision. In addition, CESA continues to recommend that the improvements included in the ESR model should not be limited solely to a novel participation pathway, and should, to the extent possible, be applied to the current non-generator resource (NGR) model as well. Moreover, CESA requests additional clarity on how the ESR participation pathway would co-optimize ancillary service clearing bids and issue corresponding power dispatch instructions. CESA also recognizes that the ISO's intent to refine its proposed state-of-charge exceptional dispatch (SOC ED) instruction by better accounting for energy market opportunity costs but offers recommendations on how to more fairly assess the impact of SOC EDs on project economics. Finally, regarding co-located resources, CESA appreciates the ISO consideration of ITC rules within this initiative and welcomes the additional optionality the electable pathway offers, noting how eligibility for this framework should be revised to ensure equitable outcomes. As such, CESA's comments can be summarized as follows:

- The proposed DEB formulation does not properly recognize the impact of SOC on the costs of an ESR and should be refined with consideration of historical prices.
- While CAISO's intent to minimize changes to the NGR model is reasonable, the new participation model is may create a disadvantage relative to NGR model.
- The ISO should provide more clarity on how the ESR model will co-optimize bids for products other than energy and issue the corresponding power dispatch instructions.
- The proposed method to calculate the opportunity costs of storage assets that have been subject to a state-of-charge exceptional dispatch (SOC ED) instruction merits improvement, particularly with regards to the number of hours it considers.
- The eligibility restrictions and limitations recommended for the co-located electable functionality are overly exclusive and have the potential to induce market uncertainty.

### **2. Provide your organization's comments on the proposed energy storage resource model, as described in the revised straw proposal:**

In the Straw Proposal, the ISO proposes the creation of a new storage participation pathway, the ESR model. The CAISO notes that this model would be available to storage assets in addition to the NGR model, which is currently used by most storage assets interconnected to the CAISO grid. In the revised Straw Proposal, the ISO describes how market power mitigation will be applied to ESR assets. The ISO proposes a DEB for energy storage resources that includes the energy costs (*i.e.* the cost for storage resources to buy the energy used for charging), cycling costs (determined based on Masterfile data, as for NGR assets) and opportunity costs. Importantly, to represent the fact that ESR resources have different marginal costs depending on their state-of-charge (SOC), the ISO recognizes that DEB for ESR assets must be sloped in some way rather than constant across the different SOC points. As such, the ISO proposes to use prices from the integrated forward market run of the day-ahead market to establish a sloped DEB, with the slope being determined by the difference between the highest priced hour of the day and the  $n$ th highest priced hour of the day, where  $n$  corresponds to the duration of the storage resource.

CESA recognizes that the efforts of the ISO seek to utilize the existing NGR DEB framework to the greatest extent possible, while realizing the benefits of the ESR framework by deriving a sloped DEB. Nevertheless, CESA believes that, as currently formulated, the ESR DEB proposal does not accurately recognize the impact of SOC on the costs of assets. During the stakeholder call held by the ISO to discuss the revised Straw Proposal, stakeholders noted that the proposed DEB structure for ESR may not serve the CAISO's goal of recognizing the impact of SOC in marginal costs as it derives the slope solely using market prices from the integrated forward market (IFM) run. CESA agrees with these concerns, as the current formulation could arbitrarily set the DEB for the highest segment of the discharge bid curve based on values that do not relate to the marginal costs, including opportunity costs, of the ESR asset. To this end, CESA agrees with the recommendations made by Pacific Gas & Electric (PG&E) to consider historical data to inform the slope, rather than only IFM values.

In addition, CESA continues to urge the ISO to consider the merits of applying several of the proposed characteristics of the ESR model to the NGR model. While CESA welcomes the innovative approach the ISO is considering to better incorporate energy storage assets to its markets, it is not readily obvious why some of the improvements the ESR model has over the NGR model cannot be readily applied to the latter. CESA understands that modifications to the fundamental bidding structure of the NGR model should be approached with caution as this is the current pathway most energy storage assets are set to use in the coming years. Nevertheless, to avoid creating disadvantages for NGR resources relative to ESR, the ISO should consider, *ad minimum*, ensuring that both the NGR and ESR models allow for representation of transition times, cycling limits, and variable charge/discharge rates in the Masterfile. If the ISO does not apply these changes for both participation pathways, CESA considers there would be clear advantages for ESR resources as they would be better positioned to represent their marginal costs and ensure unfeasible dispatch instructions are minimized.

Finally, considering that the ISO has framed the ESR participation pathway as one that optimizes dispatch instructions in terms of SOC, CESA requests additional information regarding how this model would deal with bids for other products, such as ancillary services, that are currently bid in terms of power. Will ESR assets be able to bid for these products with similar granularity? Will dispatch instructions be in terms of power or energy? Would co-optimization work as it currently does for NGR assets? CESA urges the ISO to provide more clarity on these matters prior to the issuance of a Final Proposal within this initiative.

**3. Provide your organization's comments on the proposed reliability enhancements for storage resources, as described in the revised straw proposal:**

In the Straw Proposal, the ISO lays out a number of proposals set to enhance the reliability of storage operations. In this section, CESA focuses on the proposal to establish an SOC ED instruction and compensate its application. The ISO notes that developing this ED instruction is necessary as, today, the ISO is unable to instruct a storage asset to reach and hold an SOC. In essence, this proposal seeks to replace the minimum SOC (MSOC) requirement which the ISO introduced in 2021 by creating a new type of ED and compensating energy storage resources for it through a calculation of lost energy revenues.

In the Revised Straw Proposal, the ISO has substantially modified its SOC ED compensation recommendation. The Revised Straw Proposal provides details on how opportunity costs would be determined for storage resources that are exceptionally dispatched to hold state of charge via an SOC ED. The ISO notes that for each exceptional dispatch issued to a storage resource to hold state of charge, the ISO will compute two counterfactual values:

1. The revenue maximizing energy dispatch the resource would have received if there was no exceptional dispatch in place.
2. The revenue maximizing energy dispatch that the resource would have received if the exceptional dispatch was still in place.

After calculation of both counterfactual values, the ISO will compare them and, if the resource would have been able to make additional revenue if the exceptional dispatch was not in place, then the resource would be awarded the difference between the counterfactual revenue earned without the exceptional dispatch in place and with the exceptional dispatch in place. Importantly, the Revised Straw Proposal notes that the time horizon for these counterfactuals will start from the first interval where the exceptional dispatch to hold state of charge is in place, and it will include the entire horizon of the exceptional dispatch and an additional period of time equal to the duration of the storage resource at the conclusion of the exceptional dispatch.

CESA considers that the duration of the horizon utilized to calculate the counterfactuals is unduly restrictive. First, CESA disagrees that the horizon should commence from the first interval where the exceptional dispatch to hold state of charge is in place. This is not adequate in the case in which the storage asset was first instructed to reach a SOC and then hold it. In this case, the horizon should commence when the initial instruction to charge was issued. Second, CESA disagrees that the horizon should be arbitrarily limited to the duration of the SOC ED plus the duration of the storage asset. The economics of storage resources are not restarted every number of hours, they are the result of a continuous set of iterative decisions. As such, an SOC ED instruction will have ripple effects beyond the immediate hours after it. In this context, CESA recommends the CAISO considers all the hours remaining in the day of the SOC ED when calculating the counterfactuals. CESA considers that this is an adequate middle ground as (1) it is likely that these types of EDs will be used in the peak-net peak period of the day, when a limited number of hours remain in the day; and, (2) it would be computationally challenging to look beyond the day of operations to capture a 24 hour period for counterfactual calculations.

#### **4. Provide your organization's comments on the proposed co-located enhancements, as described in the revised straw proposal:**

As stated in comments to the Straw Proposal, CESA appreciates the CAISO's consideration of the issues faced by resources that are pioneering paired participation pathways within this initiative. Optionality for co-located resources that envision capturing ITC benefits is particularly welcome considering the importance of this revenue stream for both existing paired resources, those in development, and standalone generation assets that seek to add energy storage. In this context, while CESA welcomes the additional clarity provided by the CAISO, we find some of the

recommended restrictions and limitations to be overly exclusive and potentially induce market uncertainty.

In the Revised Straw Proposal, the ISO notes that the electable co-located functionality would be available for resources that have contractual obligations not to charge from the grid, noting that market participants will be required to provide documentation that the associated storage resource is part of an energy project eligible and planning to apply for investment tax credits. CESA does not believe that contractual obligations should be necessary for an asset to use the electable functionality as the intention of applying for ITC compensation and its compliance falls squarely between the project owners and the Internal Revenue Service (IRS). The intention to apply for ITC accreditation is directly related to the revenue streams the project assumes in the financing phase. As such, intending on applying for ITC will be captured in the costs of a project when bidding into a specific contract, although the charging restrictions themselves may or may not be explicitly recognized in the contract itself. For example, a project could have an RA-only contract with a load-serving entity (LSE) which would not address charging limitations, but the price of the contract itself may be reflective of full ITC capture. For these reasons, CESA recommends that eligibility for the electable model is not limited to any specific contract language but to the asset's intention to apply for investment tax credits.

The Revised Straw Proposal also indicates that the electable functionality will only be available to assets that are online by the time of the implementation of this policy, noting that resources that strike contracts prohibiting grid charging or resources that begin participating in the ISO market after this policy goes live will not be eligible for this functionality. CESA does not consider that this limitation is reasonable considering the difficulties related to commencing commercial operations in recent years. Given the multitude of interconnection issues assets looking to participate in the CAISO have faced in recent years, it is evident that the date in which a resource is able to come online is not solely up to its project owner but to a host of factors. These factors extend beyond the jurisdiction of the ISO, touching upon the processes that must be completed by participating transmission operators (PTOs) as well as issues related to supply chain difficulties. In this context, CESA advises against limiting access to the electable functionality only for assets online by the time of implementation, instead recommending that eligibility should be tied to ITC eligibility, as demonstrated by the asset owner.

Finally, CESA requests clarity regarding the duration of the electable functionality once an asset is able to select it. Both the Revised Straw Proposal and the presentation materials used for the most recent stakeholder call suggest that resources will only be eligible for this electable functionality for a 5-year period upon joining the grid, effectively eliminating the possibility of older standalone generation assets that wish to add storage to be eligible. CESA does not believe that this limitation is reasonable as the 5-year period may not be adequate for all assets: it may be too short for projects that will still need to go through testing and commissioning while it may be too long for projects that started their ITC period prior to policy implementation. As a result, CESA recommends the elimination of this provision.

For the arguments outlined above, CESA requests the ISO to revise the eligibility considerations that have been included in the Revised Straw Proposal. Overall, CESA considers that these limitations undermine the spirit of the electable co-located functionality as first included in the Straw Proposal. As such, if the ISO decides to retain any of the aforementioned eligibility restrictions for the electable co-located functionality, it should, *ad minimum*, include an explanation on why the restrictions and their potential market effects are reasonable.

**5. Provide your organization's comments on the proposed WEIM classification for this initiative, as described in the revised straw proposal:**

CESA offers no comment at this time.

