Energy Storage and Distributed Energy Resources (ESDER) – Storage Default Energy Bid (DEB)

Draft Final Proposal

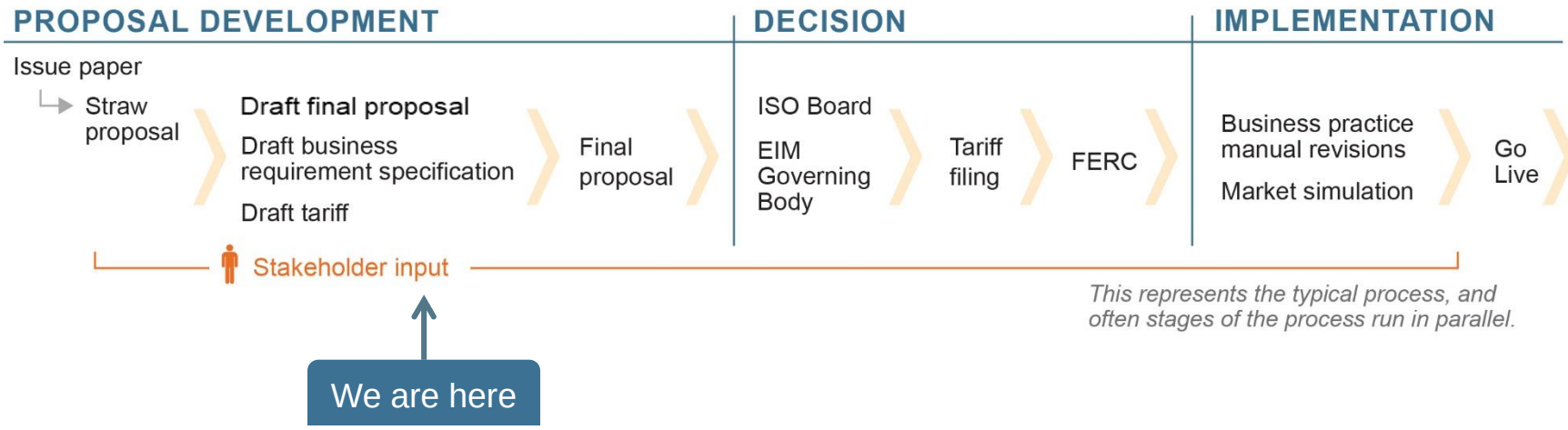
Stakeholder Web Conference

September 22, 2020

Agenda

Time	Topic	Presenter
10:00 – 10:05	Welcome and Introduction	Jimmy Bishara
10:05 – 10:40	Storage Default Energy Bid Formulation	Gabe Murtaugh
10:40 – 11:35	Updates to the DA Default Energy Bid	Gabe Murtaugh
11:35 – 11:55	Exemption from Market Power Mitigation for Small Storage	Gabe Murtaugh
11:55 – 12:00	Next Steps	Jimmy Bishara

ISO Policy Initiative Stakeholder Process



Revised schedule for ESDER tracks

Date	Milestone
Aug 21	ESDER 4 Final Proposal Published
Sept 8	Final MSC Opinion Published
Sept 15	Post Draft Final Proposal for ESDER DEB
Sept 22	Stakeholder Meeting
Sept 30/Oct 1	**Board of Governors – ESDER 4**
Oct (TBD)	Post Final Proposal for ESDER DEB
Dec 1/2	**EIM Governing Body – ESDER DEB**
Dec 16/17	**Board of Governors – ESDER DEB**

DEFAULT ENERGY BID FORMULATION

The ISO will apply market power mitigation to energy storage resources, and offer these resources a DEB

- The proposed default energy bid for energy storage resources estimates marginal costs based on three primary cost categories:
  - 1) Energy costs and losses, 2) Cycling costs, 3) Opportunity costs

Previous Formulation:

$$Storage\ DEB = Max\left[\left(En_{\delta/\eta} + \rho\right), OC_{\delta}\right] * 1.1$$

Where:

En: Estimated cost for resource to buy energy
δ: Energy duration
η: Round-trip efficiency
ρ: Variable cost
OC: Opportunity Cost

The ISO acknowledges that the proposed DEB is a first step to preventing the exercise of market power

- Mitigation will be applied to the entire bid curve
- Mitigation will not decrease schedules or hours when 'downward' market power may be exerted
  - The ISO will address this in future updates of the default energy bid
- Market power mitigation does not mitigate to a "spread"
- Actual energy purchase prices are not considered

- Additional discharge scheduled in the day-ahead market, during mitigated hours, may imply additional charging earlier in the day

MSC RECOMMENDATIONS

Formal opinion from MSC was insightful and included more detail than discussed in previous meetings

- The storage DEB was discussed at four MSC meetings
  - ISO policy team had many additional off-line discussions with the MSC
- MSC proposed two improvements to the default energy bid that the ISO is considering
  - Setting a limit for ‘small’ storage resources that exempt them from being subject to the default energy bid
  - Not including the opportunity cost in the DA default energy bid formula
- MSC discussed many facets of an ‘ideal’ solution
- MSC noted additional features with the end of hour parameters could help to correctly value state of charge at the end of the real-time optimization horizon
  - Prices that change based on state of charge
  - Pricing for stored energy ($/MWh) at the end of hour

The MSC offered additional potential DEB changes that could may be considered by the ISO in the future

- MSC proposed storage resources not include charging costs in the DEBs, which could distort market awards
  - The ISO is not inclined to include this change, as this has been discussed with stakeholders early in this initiative
  - ISO may reexamine this if making large-scale changes to the DEB later
- MSC emphasizes the need for participants to control the value of the state of charge at the end of the horizon
  - With expected prevailing market prices, this may not be necessary

PROPOSED CHANGES

The ISO includes two changes to the default energy bid from the previously proposed ESDER policy

1. Update the day-ahead default energy bid so that it does not include opportunity cost
   - MSC identified that these costs were not needed in the day-ahead default energy bid
   - These costs will continue to be observed in the real-time market, this is important because of the shorter look-ahead horizon

2. Exclude ‘small’ storage resources from being subject to the ISO market power mitigation logic tools

The ISO proposes an update to the formulation of the day-ahead default energy bid

Proposed DA DEB Formulation:

$$DA\ Storage\ DEB = \left(En_{\delta/\eta} + \rho\right) * 1.1$$

- This formulation does not include the opportunity cost
  - The opportunity cost is implicitly assumed in the day-ahead market
- Day-ahead market schedules the resource to charge when prices are low and discharge when prices are high
- This formulation continues to consider the cost of the resource to charge and the variable cost of the resource for operation
  - Resource will only receive discharge schedules if prices are sufficient for economic dispatch, considering these costs

The ISO is planning to exclude small storage resources from market power mitigation

- MSC argued that this was practical for storage resources for two reasons:
  - Low benefits from mitigating small storage resources
  - Potentially high negative consequences for mitigating storage resources due to rapidly changing storage technology

- In light of this recommendation, the ISO proposes to offer such a safe harbor
- The ISO proposes to not apply market power mitigation to resources smaller than 5 MW and that do not have an ultimate parent that is a ‘net-supplier’

Next steps

- All related information for the ESDER initiative is available here: https://stakeholdercenter.caiso.com/StakeholderInitiatives/Energy-storage-and-distributed-energy-resources
- Please submit stakeholder written comments on today's discussion and the hybrid resources draft final proposal by October 6, 2020

Important – *Please review new process for submitting comments*

- Provide comments using the new stakeholder commenting tool
- First-time users must register using their email address in order to submit comments on initiatives
- The commenting tool is located on the Stakeholder Initiatives landing page (click on the "commenting tool" icon): https://stakeholdercenter.caiso.com/StakeholderInitiatives