



Energy Storage and Distributed Energy Resources Phase 3 (ESDER 3)

Straw Proposal

Stakeholder Conference Call

February 21, 2018

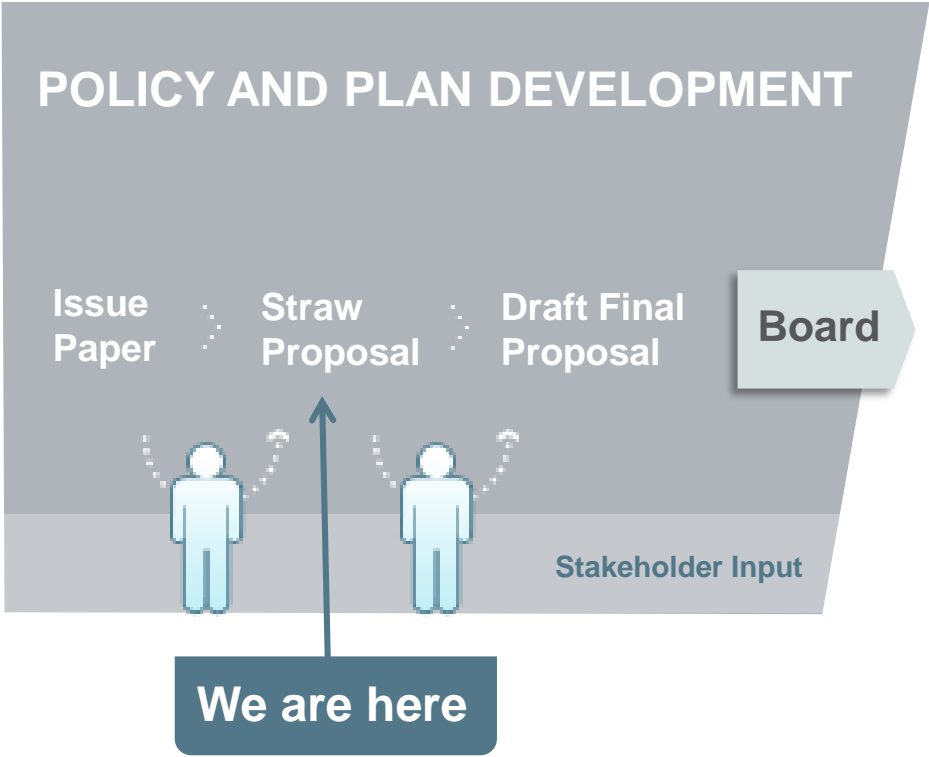
1 p.m. – 4 p.m. (Pacific Standard Time)

Agenda

Time	Item	Speaker
1:00 - 1:10	Stakeholder Process and Schedule	James Bishara
1:10 - 1:15	Introductions	Eric Kim
1:15 - 1:30	Background and Scope	
1:30 - 2:00	Proposal for Demand Response	
2:00 - 2:30	Proposal for Multiple-Use Applications	
2:30 - 3:50	Proposal for Non-Generator Resource	
3:50 - 4:00	Next Steps	James Bishara

STAKEHOLDER PROCESS

CAISO Policy Initiative Stakeholder Process



Background/Scope

ESDER's goal is to lower barriers and enhance the ability of storage and DER to participate in the ISO market

- ESDER Phase 1 was completed in 2016
 - Introduced a new baseline methodology for meter generator output and developed statistical sampling
 - Improved accuracy of state of charge (SOC) for day-ahead optimization and allowed an option for SOC self-management
- ESDER Phase 2 was approved by ISO Board in July 2017
 - Planned implementation for spring 2017
 - New baseline methodologies, changes to net benefits test, and tariff clarification of station power definition

The CAISO proposes the following scope for ESDER 3

- New bidding and real-time dispatch options for demand response (DR)
- Removal of the single load serving entity (LSE) aggregation requirement and the need for application of a default load adjustment (DLA)
- Load shift product for behind the meter (BTM) storage
- Measurement of behind the meter electric vehicle supply equipment (EVSE) load curtailment
- Assessment of multiple-use application (MUA) tariff and market design changes
- Develop a process to qualify NGRs for use-limited status
- Identify policy developed for commitment costs that apply to NGRs

DEMAND RESPONSE PROPOSALS

New bidding and real-time dispatch options for DR

1. Inform stakeholders of the status of Commitment Cost and Default Energy Bid Enhancements (CCDEBE)
 - Allows resources with a 0 MW minimum operating level to reflect minimum load and start-up costs
 - Clarifies definition of startup costs
 - Proposal will help market participants clearly define commitment costs and be appropriately valued and optimized within the residual unit commitment (RUC) process

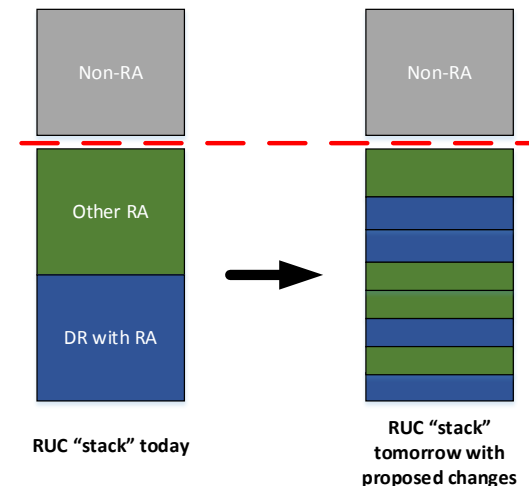
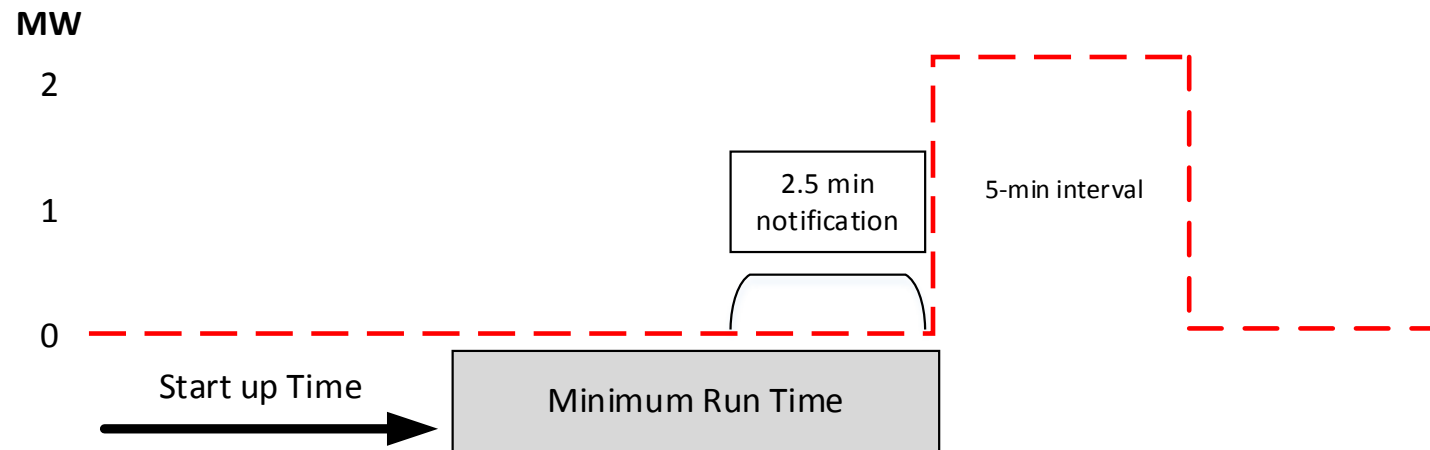


Illustration of a DR resource with a Pmin of 0 MW committed in Residual Unit Commitment (RUC)



New bidding and real-time dispatch options for DR

2. Introduce three new bidding options

(1) Hourly block – Self-schedules fixed for the hour that is communicated to resource at 52.5 minutes before the flow of energy

- Resource is a price taker for the full hour

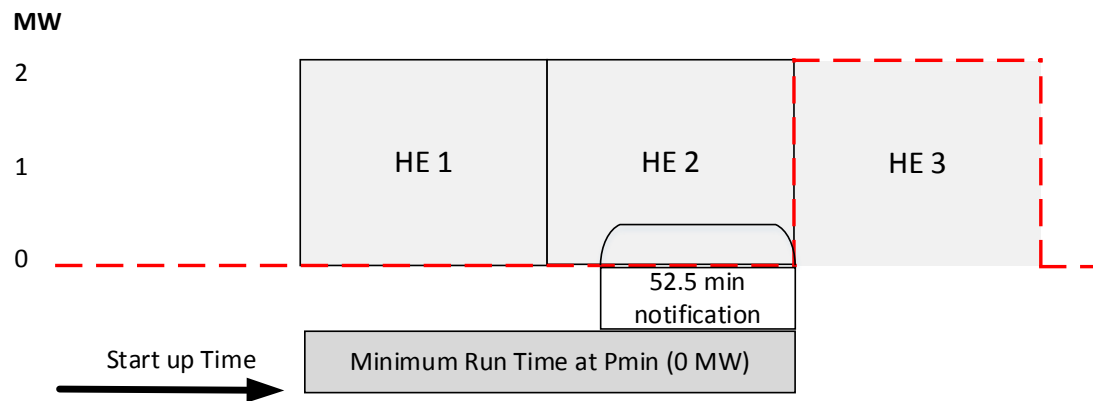
(2) Hourly block with single change – Submits self-schedule for the hour but has the option to change schedule once per hour

- Binding schedule is communicated 22.5 minutes prior to flow
- If economic over remainder of the hour, receives a binding schedule at FMM price in binding interval, advisory for remaining intervals

New bidding and real-time dispatch options for DR (cont'd)

- (3) 15 minute dispatchable – Bids submitted, committed at FMM price, and communicated 22.5 minutes before flow of energy
 - Eligible for bid cost recovery

Illustration of a DR resource with a Pmin of 0 MW committed in RUC utilizing the hourly block bidding option



- Minimum run time maintained at Pmin
- Ample notification time prior to real-time dispatch and resource response
- Response time held for one or more hours

Next steps and requested feedback under proposal

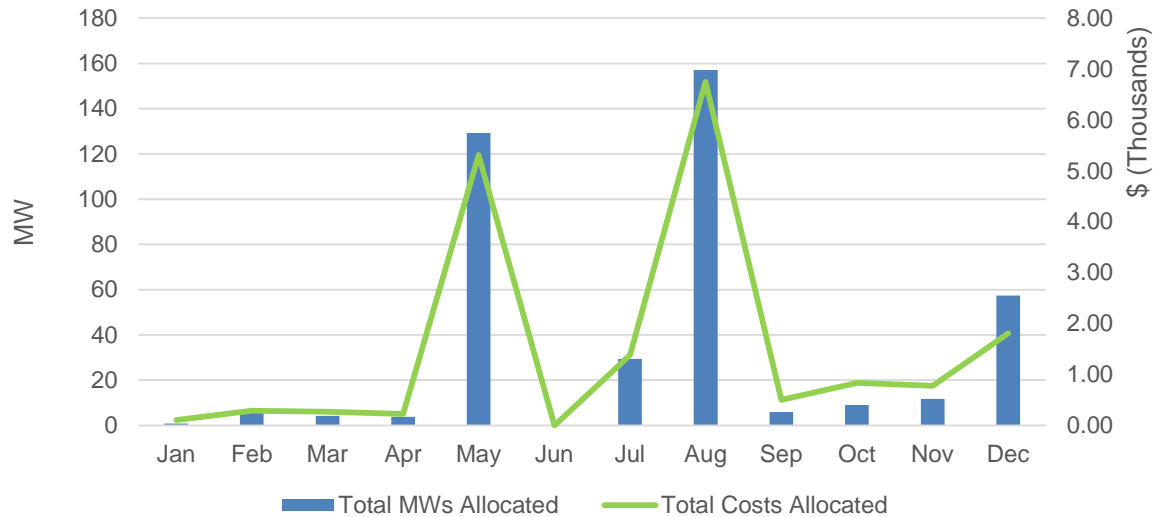
- The CAISO will consider how the Day Ahead Market Enhancements initiative and FERC Order 841 might impact details of the proposal
- Are there other considerations the CAISO needs to address in this proposal to ensure resources can feasibly respond to dispatches in real-time?

Removal of the single LSE aggregation requirement and application of the DLA

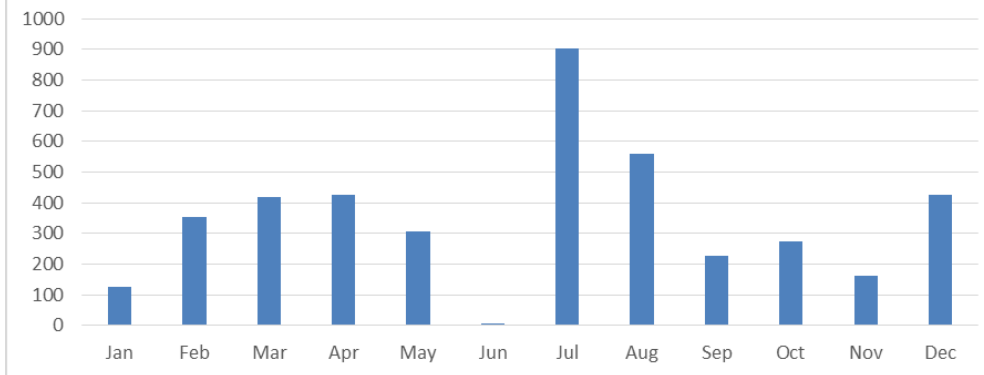
- The CAISO proposes to
 - Remove the requirement of a PDR or RDRR resource aggregation to be limited to one LSE
 - Develop a SIBR rule to only accept bids above the Net Benefits Test threshold price for these resources
 - Eliminates need for the default load adjustment settlement mechanism tied to the resource's LSE

Support for removing the application of the DLA

2017 Monthly DLA Impact



2017 Frequency of DLA



Next steps and requested feedback under proposal

- SIBR rules to be developed in more detail
- Is there general consensus for the removal of the DLA to enable multi-LSE aggregations?

Load shift product for behind the meter storage

- The load shift product will enhance the PDR model to allow for BTM storage participation to provide grid services during oversupply conditions
- Key features
 - Load shift is not RA capacity
 - It is a non-exporting product
 - Only resources that can be directly metered
 - Ability to bid a negative cost for energy services
 - Resource pays full retail rate for all charging energy

Next steps and requested feedback under proposal

- Will continue developing product features through a working group to
 - Incorporate NGR functionality into the PDR participation model
 - Evaluate and determine applicability of NBT to demand responding to negative price signals for consumption
- Are there any CPUC regulations that require updating to accommodate load shift functionality (i.e. any RA conflicts)?
- Are there other product features that should be considered?

Measurement of behind the meter EVSE load curtailment

- ESDER 1 implementation included the meter generator output (MGO) performance measurement
 - Recognized a sub-metered storage device's contribution to a facility's overall load curtailment during a CAISO dispatch event
- Received support from a majority of stakeholders to extend the MGO concept to the sub-metered EVSE
 - provides an option for direct measurement of EVSE load curtailment, independent of its host customer, in response to a market dispatch

Next steps and requested feedback under proposal

- CAISO will establish a working group to develop proposal details on EVSE
 - sub-metering requirements
 - performance measurement
- Additional proposal details that should be considered and addressed in the working group?

MULTIPLE-USE APPLICATIONS PROPOSAL

MUA proposal in scope for ESDER 3

- The CAISO proposes to perform a comprehensive review and analysis of what is needed to facilitate the rules and framework established in the MUA decision including
 - identifying all tariff and current participation model changes that would be needed
 - actively participating in all 2018 CPUC working group meeting and evaluate recommendations proposed that can be taken up in ESDER 3 or identified as a separate initiative
 - deliver an assessment report of potential tariff and market changes needed

NON-GENERATOR RESOURCE PROPOSAL

CAISO's positions on the issue of throughput management

- The CAISO maintains that the current NGR participation model allows resources to reflect throughput limitations through bidding parameters
 - Supported from several stakeholders with market experience
 - Enhancements to the current NGR model are possible given FERC Order 841; under evaluation
- Powin Energy's claimed an issue with infeasible automatic general control (AGC) dispatch
 - CAISO is in the process of addressing questions with Powin Energy
 - Internal review has not identified an issue with AGC signaling or NGR modeling

CAISO's positions on the issue of state-of-charge management

- The CAISO will not consider proposals for request for multi-segment AS bids or multiple bid offers
 - Stakeholders' proposals are detailed in the paper
 - Both suggestions would require a fundamental market design change that would apply to all resources
 - Will need to be addressed through the stakeholder catalog process

The CAISO proposes to develop a process to define use-limited status for NGRs


- Use-limited status will allow for NGRs to submit “use-limit reached” outage cards
- The Straw Proposal asks for the following:
 - Potential use-limited qualifying factors
 - Types of documents a resource owner would provide to the CAISO
 - Commitment to show specific manufacturer contract provisions for cycling limitations

Next steps and requested feedback under proposal

- CAISO requests storage owners/operators reach out and share any problematic market or operational experiences for CAISO evaluation
 - Will consider if participation model changes are needed based on evaluation and understanding of root causes
- FERC Ruling on Order 841 (Storage Participation in ISO/RTOs)
 - Ruling details are currently under review within the CAISO
 - Tariff and market design changes to align with ruling will be considered within ESDER 3

NEXT STEPS

Next Steps



Milestone	Date
Straw Proposal Posted	February 15, 2018
Stakeholder call	February 21, 2018
Stakeholder comments due	March 7, 2018

Written stakeholder comments on the issue paper are due by COB March 7 to InitiativeComments@caiso.com.

Materials related to the ESDER Phase 3 initiative are available on the ISO website at http://www.caiso.com/informed/Pages/StakeholderProcesses/EnergyStorage_DistributedEnergyResources.aspx

THANK YOU

Stay connected



@California_ISO



Download ISO Today
mobile app



Sign up for the
Daily Briefing at
www.caiso.com