![California ISO]

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

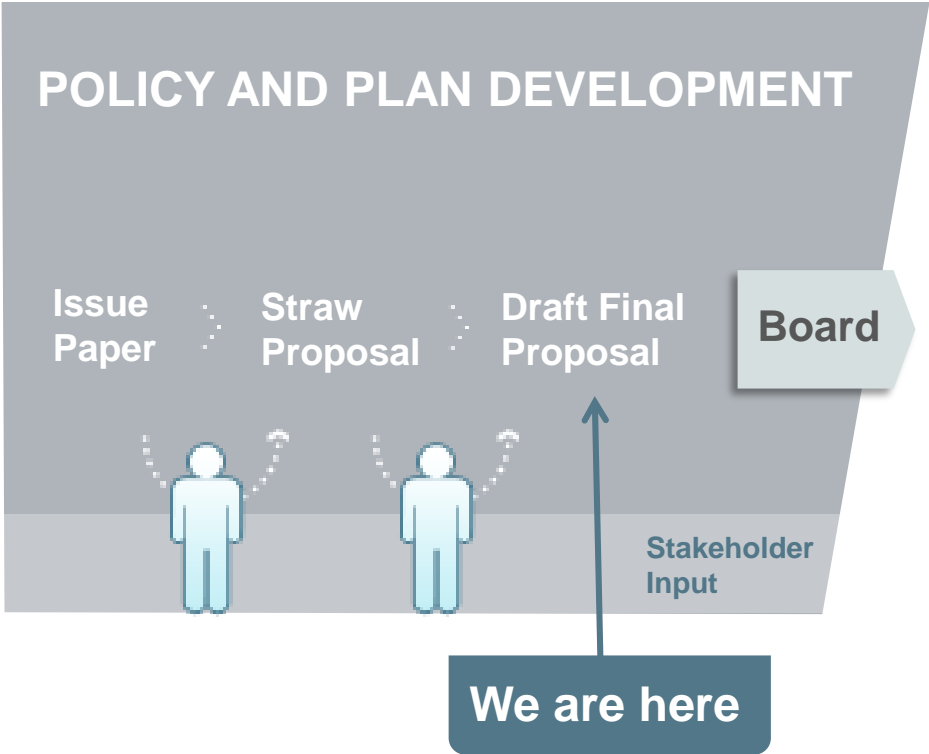Webconference
June 25, 2018
9 a.m. – 12 p.m. (Pacific Standard Time)

Agenda

Time	Item	Speaker
9:00 - 9:10	Stakeholder Process and Schedule	James Bishara
9:10 - 9:15	Introductions	Eric Kim
9:15 – 11:00	PDR-LSR Design	
11:00 – 11:10	Next Steps	James Bishara

California ISO

CAISO Public

STAKEHOLDER PROCESS

CAISO Policy Initiative Stakeholder Process

Scope/Objectives

CAISO Public

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

Objectives

Review changes and updates to PDR-LSR proposal

1. Review final design proposal

2. Discuss performance evaluation methodology

California ISO

PROXY DEMAND RESOURCE-LOAD SHIFT RESOURCE

California ISO

Load Shift will be an option provided for a demand response resource participating under a Demand Response Provider Agreement

Demand Response Provider Agreement

Proxy Demand Resource (PDR)

Economic demand response that only provides load curtailment

PDR Load Shift Resource (PDR-LSR)

Economic demand response that provides both load curtailment and consumption

This load shift option will initially be available for PDRs utilizing sub-metered behind the meter energy storage

The PDR-Load Shift Resource (PDR-LSR) will allow for the provision of grid services for both the decrease or increase of load.

Key features

- Requires direct metering of BTM energy storage
- Resource pays full retail rate for all charging energy
- For load curtailment
    - Maintains RA capacity eligibility
    - Non-exporting rule applies
- For load consumption
    - Ineligible for RA capacity and ancillary services;
    - Ability to bid a negative price for energy

Clarification and Conflicting Dispatches

- June 5 – proposed a potential path of a single resource ID model for the PDR-LSR

- Proposing to return to the two resource ID model with an additional qualification

  - Resource ID for curtailment must register with a Pmin of 0 MW

- Proposed bidding requirements will remain the same to prevent conflicting dispatches

- Performance evaluation methodology

  - 10 in 10 CLB used but calculation of the event will use 15-minute interval data and not hourly

Pre-market: Registration and Masterfile

- A PDR-LSR must create a registration for both curtailment and consumption; cannot register to only offer load consumption
  - Registrations for both resources may utilize the same service account(s)
  - Registrations must include locations with a sub-metered storage device.

- The PDR-LSR will be registered as two separate resource IDs in the Masterfile
  - Resource ID for load curtailment (PDR-LSR_{curt})
  - Resource ID for load consumption (PDR-LSR_{cons})

Bidding and Energy services

Bidding

- Both PDR-LSR bidding options must be uniform
  - 15-minute or 5-minute dispatchable
- Will be eligible for bid cost recovery
- PDR-LSR_{curt} can bid at or above $0
- PDR-LSR_{cons} can bid from -$150 to < $0

Energy Services

- Energy
- Ancillary Services (only for curtailment)
- Flexible Ramping Product
- Day Ahead Flexible Ramping Product (DA Markets Enhancements)

10 in 10 typical use calculation to determine performance value of load shift

- PDR-LSR will separately calculate for curtailment and consumption
  - Calculation will be triggered when a resource is awarded and dispatched in the ISO market
  - 10 non-event "like" days, specific to the 15-minute interval of the "event" is selected
    - "Event days" are considered as either a dispatch or outage in the ISO market
    - An "event interval" can occur on either the consumption or curtailment end

PDR-LSR Performance Evaluation Methodology

- Will measure and net out "typical use" to define incremental value of load shift provided

  - **LSR-curtailment**
    - $LSR_{curt} = [|G(t)| - G_{LM}]$

  - **LSR-consumption**
    - $LSR_{cons} = [G(t) - G_{LM}]$

PDR-LSR "typical use" calculations

- Typical Use Curtailment (G_{LMcurt}) : 10-in-10 CLB, using 10 non-event hours including both consumption and curtailment but only accept a <u>value that is at or above 0.</u>

$$G_{LM} = Max\{(G_{LMcurt} + G_{LMcons}), 0\}$$

- Typical Use Consumption (G_{LMcons}) : 10-in-10 CLB, using 10 non-event hours including both consumption and curtailment but only accept a <u>value that is at or below 0.</u>

$$G_{LM} = Min\{(G_{LMcurt} + G_{LMcons}), 0\}$$

Key takeaways from performance evaluation methodology of PDR-LSR

- Both methodologies will incorporate consumption/curtailment values when calculating "typical use"

- The net-export rule will only apply under the LSR-curtailment methodology

- When choosing non-event 15-minute intervals for both curtailment and consumption, events from either resource will be taken out.

  - An event from either resource creates "non-typical" behavior of those resources.

NEXT STEPS

Next Steps

Preparing Draft Final Proposal for mid-July release

Written stakeholder comments on today's stakeholder call are due by COB July 6 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