Energy Storage and Distributed Energy Resources (ESDER) Phase 2

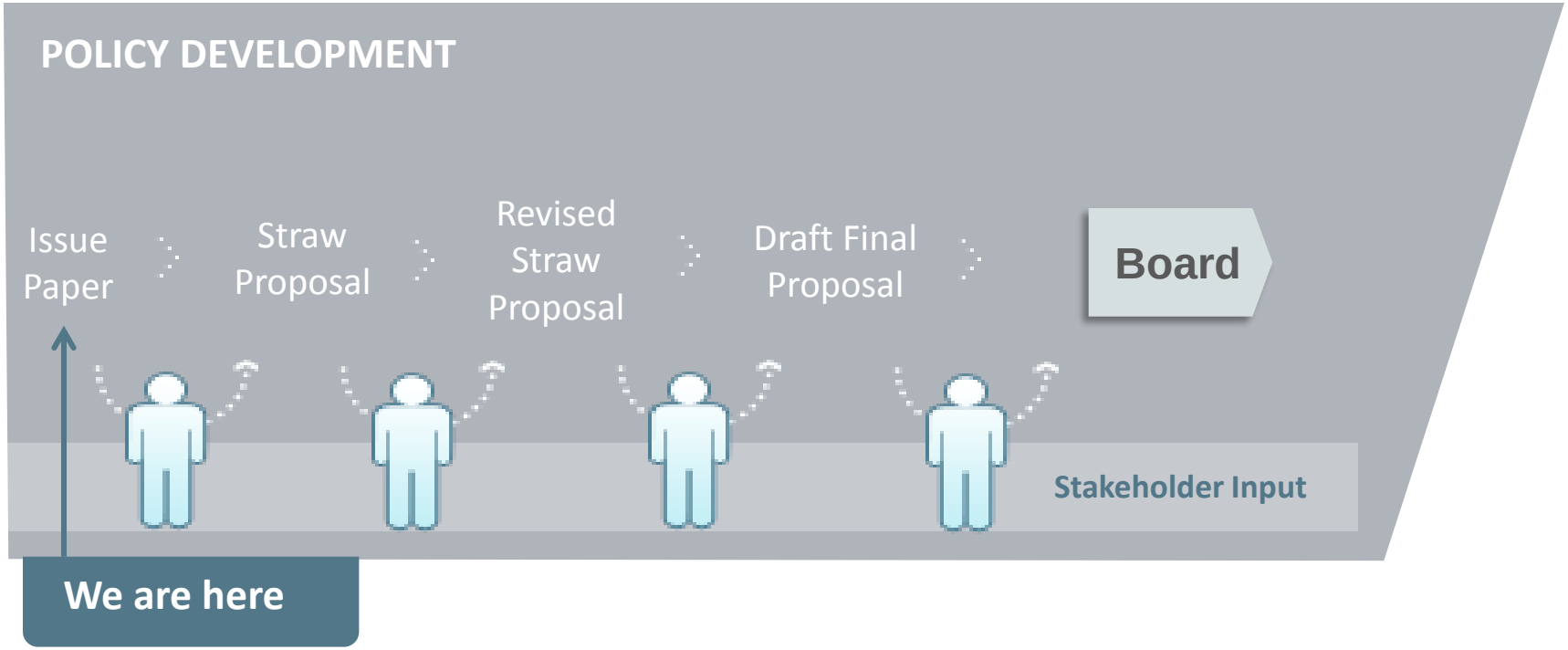
Issue Paper

Stakeholder web conference
April 4, 2016
1:00 – 4:00 (Pacific Time)

Agenda

Time	Agenda Item	Speaker
1:00-1:10	Introduction, Stakeholder Process	Tom Cuccia
1:10-1:20	Background/Scope	Tom Flynn
1:20-1:50	NGR Enhancements	Peter Klauer
1:50-2:20	Demand Response Enhancements	John Goodin
2:20-2:50	Multiple-Use Applications	Lorenzo Kristov
2:50-3:20	Station Power	Bill Weaver
3:20-3:50	Allocation of TAC to Load Served by DER	Lorenzo Kristov
3:50-4:00	Next Steps	Tom Cuccia

ISO Stakeholder Initiative Process



Stakeholder process schedule

Step	Date	Event
Issue Paper	March 22	Post issue paper
	April 4	Stakeholder web conference
	April 18	Stakeholder comments due
Straw Proposal	May 18 (new date)	Post straw proposal
	May 25 (new date)	Stakeholder web conference
	June 9	Stakeholder comments due
Revised Straw Proposal	July 12	Post revised straw proposal
	July 19	Stakeholder web conference
	August 2	Stakeholder comments due
Draft Final Proposal	September 8	Post draft final proposal
	September 15	Stakeholder web conference
	September 29	Stakeholder comments due
Board Approval	October 26-27	Board of Governors meeting

Background/Scope

Background on ESDER initiative

- Purpose: Lower barriers and enhance ability of storage and DER to participate in the ISO market.
- ESDER Phase 1 was conducted in 2015.
  - Enhancements to NGR and Demand Response were approved by ISO Board in February 2016.
  - Tariff development process getting underway soon.
- ESDER Phase 2 now underway.
  - Scope of topics were presented in March 22 Issue Paper and the subject of today's call.

Scope of ESDER Phase 2

- Started with mid-2015 list of topics from ESDER Phase 1
- Added other topics suggested by stakeholders
- Pared resultant list down to a feasible scope for potential policy development in 2016. Factors included:
  - Perceived priority of each topic
  - Allocation of ISO staff resources to CPUC energy storage proceeding (and other related proceedings)
  - Balancing development of new enhancements against implementation of enhancements previously developed (e.g., ESDER Phase 1 and DERP)

NGR Enhancements

Represent use limitations in the NGR model

- The industry is learning how different storage technologies behave and are best managed
- It is likely that all storage technologies can not be expected to have the same limitations and constraints
- Storage providers can ‘tune’ storage for specific applications and services
- The ISO would like to consider NGR modeling enhancements that may better reflect resource use limitations that can not be accomplished through bidding strategy alone

Represent use limitations in the NGR model

- Examples of potential use limitations
  - Maximum annual discharge
  - Maximum or minimum numbers of charge/discharge cycles over time
  - Transition time
- The ISO is seeking input to better understand the physical use limitations that storage resources may have and invites stakeholders to provide storage technology specific examples and use-cases that could be considered for NGR modeling

Represent multiple configurations in the NGR model

- Today's NGR modeling assumes that the resource performs consistently within its charge and discharge operating regions
- This consistency may not apply for certain storage technologies or resource aggregations where the resource may perform significantly differently across operating regions
  - Ramping or rate of charge/discharge based on state of charge or other factors affecting the performance curve

Represent multiple configurations in the NGR model

- The ISO would like to explore multiple configurations for a single NGR where each configuration is allowed different operating characteristics and economic bid curves based on physical constraints of the resource
- Configurations could apply to charge and discharge modes differently

Demand Response Enhancements

Ability for PDR to both curtail and consume energy

- Expand PDR to enable bids to consume energy and respond to ISO dispatches, from:
  - True load consumption- “Consumption Baseline”
  - BTM Device- Directly metered
- Stakeholder led Load Consumption Working Group
  - Submit straw proposal into ESDER initiative for broader stakeholder approval and ISO adoption.
- Identify and resolve policy and technical issues, e.g.
  - What retail policies and rate impacts need to be resolved prior to wholesale implementation?
  - How would performance be assessed- for direct metered or true load consumption?

Alternative baselines to assess PDR performance

- Stakeholder led Baseline Analysis Working Group
- Vet and propose baseline performance methodologies and their application by customer type, end-uses, and load profiles.
  - Provide quantitative analysis on the accuracy, bias, and variability of any proposed baselines
  - Discuss applications and how baseline improves accuracy, and reduces bias and variability over the current 10-in-10 baseline
  - How administered; what tools and capabilities would the ISO need to assess best fit.
- Submit straw proposal into ESDER initiative for broader stakeholder approval and ISO adoption.

Multiple-Use Applications

Multiple-Use Applications

- Multiple-use applications are those where an energy resource or facility provides services to and receives compensation from more than one entity.
- DER may be located on either the utility side or customer side of the end-use customer meter.
- DER, including distribution connected storage, could potentially provide and be compensated for services provided in three areas – customers, the distribution system and the wholesale market.

Proposed effort in ESDER Phase 2

- The CPUC has identified multiple-use applications as in the scope of Track 2 of its energy storage proceeding (Rulemaking 15-03-011).
- To avoid redundant and potentially divergent efforts the CAISO will initially address this topic by participating in that CPUC proceeding.
- If the CPUC proceeding identifies issues that should be addressed in an ISO initiative, or develops proposals the ISO should consider formally adopting, the ISO can open a new initiative or expand ESDER Phase 2.
- CPUC and CAISO are planning to hold a joint workshop May 2-3, 2016.

Station Power

Distinction between charging energy and station power

- Energy for resale is considered wholesale under the Federal Power Act, which means that charging a storage device is a wholesale activity.
- Station power is energy consumed to operate a generator. It is subject to a retail rate.

Both CAISO and CPUC are examining this topic

- In ESDER Phase 2, the CAISO intends to explore:
  - The distinction between traditional station power and charging (e.g., for temperature regulation)
  - Metering and battery configurations that can help to distinguish between charging and station power.
- The CPUC is exploring this issue from the retail side in Track 2 of its energy storage proceeding (R.15-03-011).
- CPUC and CAISO are planning to hold a joint workshop May 2-3, 2016.

Allocation of Transmission Access Charge (TAC) to load served by DER

Which internal load should be assessed TAC?

- To recover participating transmission owners' FERC-approved revenue requirements, the ISO charges TAC to each MWh of internal load and exports.
  - Internal load is assessed by aggregating end-use customer meters.
- In the TAC Options initiative, Clean Coalition argued that ISO should charge TAC to net load at the transmission-distribution interface, because the current method:
  - Denies customers the transmission cost savings of wholesale distributed generation, and
  - Denies local generation fair market competition, and
  - Denies communities the benefits of local energy development.

Which internal load should be assessed TAC?(cont.)

- The ISO will consider this issue in ESDER Phase 2.
- The ISO has initially identified at least three issues with Clean Coalition's proposal:

1. Transmission investment is mainly driven by peak load conditions, which may not be reduced by adding distributed generation (DG).
2. New DG does not offset the cost of transmission that was previously approved and is currently in service.
3. Exempting some load from TAC charges would not decrease PTO revenue requirements, so some costs would be shifted to other customers.

Next Steps

Request stakeholder comments by COB April 18

Be sure to use comments template provided

Submit to comments mailbox:
initiativecomments@caiso.com

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Thank you!