

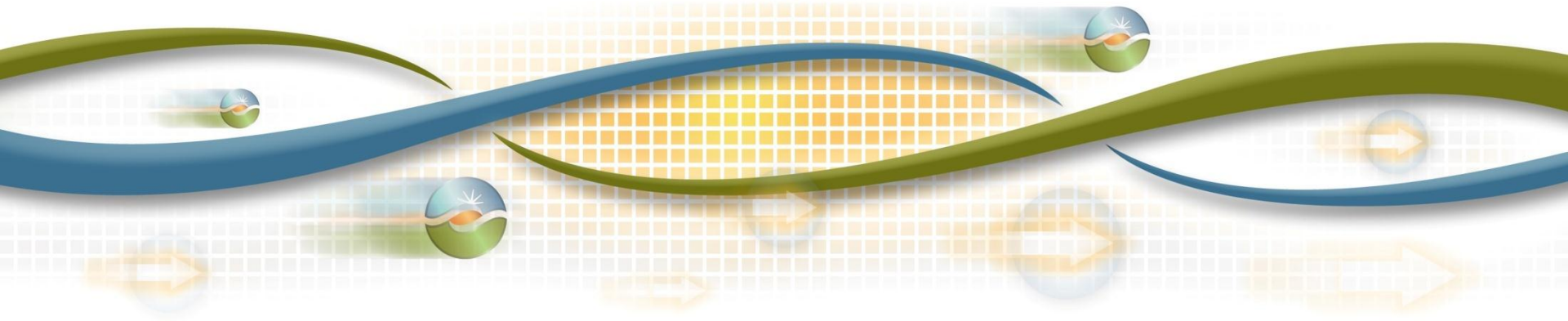


California ISO
Shaping a Renewed Future

Energy storage and distributed energy resources (ESDER) stakeholder initiative

Issue Paper and Straw Proposal

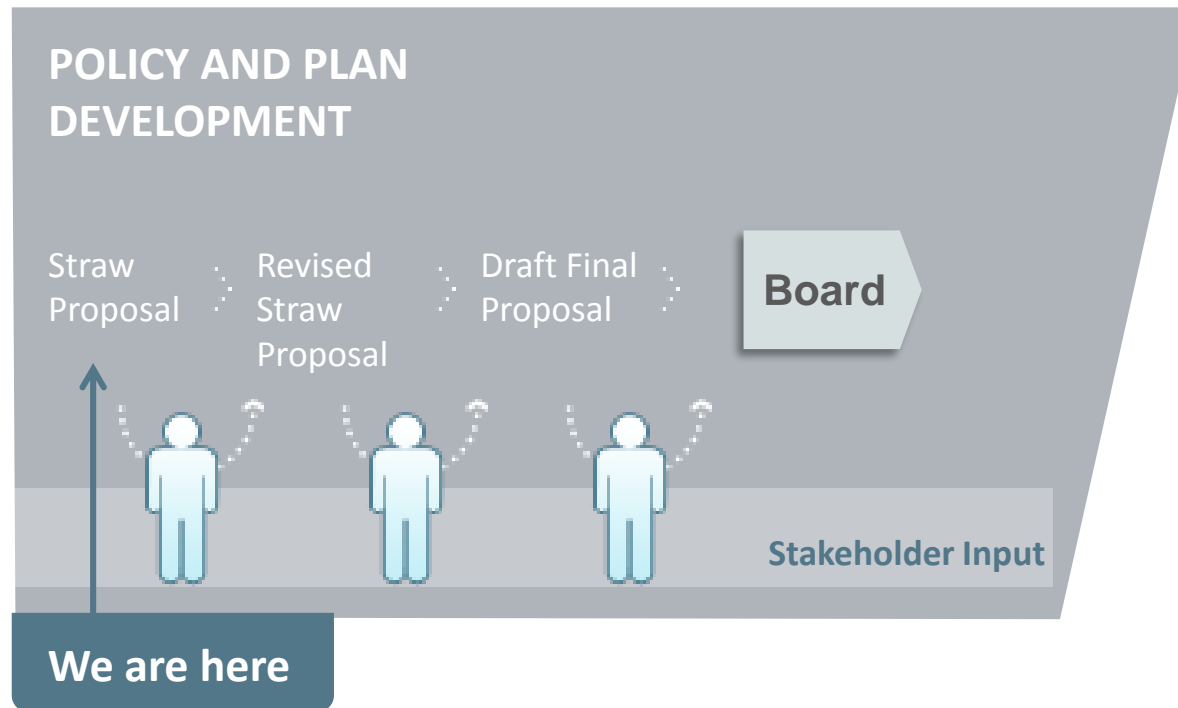
Stakeholder web conference
August 6, 2015
9:00 a.m.-12:00 p.m.



Agenda

Time	Agenda Item	Speaker
9:00-9:05	Introduction, Stakeholder Process	Tom Cuccia
9:05-9:15	Background	Tom Flynn
9:15-10:00	Multiple use applications	ISO team
10:00-10:45	PDR/RDRR enhancements	ISO team
10:45-11:30	NGR enhancements	ISO team
11:30-11:45	Next Steps	Tom Cuccia

ISO Stakeholder Initiative Process (policy development phase)



Stakeholder process schedule leading up to this point

Step	Date	Event
Clarification of existing ISO requirements, rules, market products and model for storage and DER	April 16 & 23, 2015	Hold education forums
Proposed ESDER Scope & Schedule	May 13, 2015	Post proposed scope & schedule
	May 21, 2015	Stakeholder web conference
	May 29, 2015	Stakeholder comments due
Revised ESDER Scope & Schedule	June 10, 2015	Post revised scope & schedule
	June 17, 2015	Stakeholder comments due

Stakeholder process schedule now and going forward

Step	Date	Event
Issue Paper & Straw Proposal	July 30	Post issue paper and straw proposal
	August 6	Stakeholder web conference
	August 18	Stakeholder comments due
Revised Straw Proposal	September 17	Post revised straw proposal
	September 29	Stakeholder web conference
	October 9	Stakeholder comments due
Draft Final Proposal	November 5	Post draft final proposal
	November 12	Stakeholder web conference
	November 20	Stakeholder comments due
Board approval	December 17-18	ISO Board meeting

Background

- Focus of the ESDER stakeholder initiative is on enhancing participation of grid connected storage and distribution connected resources in the ISO market.
- Scope and schedule of ESDER is divided into
 - Issues for potential policy resolution in 2015 (phase 1)
 - Issues for potential policy resolution in 2016 and beyond (phase 2)
- The 2015 scope is the sole focus of the July 30 paper and today's stakeholder web conference.
- Work on the 2016 scope of issues will begin early next year.

Background (continued)

- 2015 scope of issues
 - A limited set of non-generator resources (NGR) enhancements
 - Consideration of alternative baseline methodologies for demand response resources (PDR & RDRR)
 - Addressing questions associated with some non-resource adequacy multiple use applications
- A more extensive set of issues will be addressed in the second phase of the ESDER in 2016.

Non-resource adequacy (non-RA) multiple use applications

Multiple-use applications addressed in 2015 are limited to non-RA scenarios.

- The resource is not providing RA capacity during the given month, or
- Resource is providing RA from only a portion of its capacity
- Multiple-use type 1: Resource provides services to the distribution system and participates in ISO market
- Multiple-use type 2: Resource provides services to end-use customers and participates in ISO market

Type 1: Resource provides services to the distribution system and participates in ISO market

- *Services needed by distribution system are yet to be defined*
 - Need service definitions, performance requirements, performance measurement
- *Assume distribution-level services will require DER to meet real-time operating needs and follow distribution utility operating instructions*
- *Today's focus is on posing key questions for stakeholder input*
 - *Especially seeking stakeholder-provided use cases*

Type 1: Resource provides services to the distribution system and participates in ISO market

Question 1: How do we manage conflicting real-time needs or dispatches by the distribution utility and the ISO?

- One possibility is that the resource prioritizes the distribution system need and, as a result, does not fully comply with ISO dispatch
 - Resource would incur uninstructed deviation in ISO market
- Alternatively, develop real-time procedures to utilize the resource for the highest priority need

Type 1: Resource provides services to the distribution system and participates in ISO market

Question 2: If distribution system and ISO needs are aligned, and resource's actions meet needs of both:

- Is there a concern about resource being paid twice for the same performance?
- Under what situations is double payment a concern?
- How should we address this concern?

Type 1: Resource provides services to the distribution system and participates in ISO market

Question 3: Should there be any restrictions on a DER aggregation providing distribution-level services?

- DER aggregation can participate in ISO markets, but constituent sub-resources cannot participate apart from the aggregate resource
- For a given distribution system need, the distribution utility may want to call upon a single sub-resource
 - Would the distribution utility ever call upon a multi-node DER aggregation to address a local distribution problem?
- Dispatch of the sub-resource would change the performance characteristics and distribution factors of the DER aggregation

Type 2: Resource provides services to end-use customers and participates in ISO market

Three types of multi-uses:

1. DER installed behind customer meter, such that flow across the customer meter is always net load
 - Is this covered under PDR topic in this initiative?
2. DER installed behind customer meter, such that flow across the customer meter can be net load or net injection at different times
 - Is this covered under NGR topic in this initiative?
3. DER installed on the utility side of the meter, may provide service to end-use customers and participate in wholesale market
 - Scenario mentioned in CPUC Energy Storage OIR, but ISO is not aware of use cases existing or proposed at this time

Stakeholders are requested to describe in detail any use cases or issues not covered by the above that should be addressed in this initiative.

PDR/RDRR enhancements – alternative baseline methodologies

Proposed PDR/RDRR enhancements in 2015 scope of ESDER

- Evaluate inclusion of baselines that meet North American Energy Standards Board (NAESB) measurement and validation standards.
- Clarify how to enable alternative baselines that meet NAESB standards and specify tariff provisions to define alternative baselines in ISO business practice manuals (BPMs).

Baseline methodologies in ISO tariff

- Customer baseline methodology for Proxy Demand Resources (PDRs) and Reliability Demand Response Resources (RDRRs)
 - ISO tariff section 4.13.4
 - Similar to NAESB baseline Type 1
 - Referred to as “ISO Type 1” in July 30 paper
- Provision of statistically derived meter data
 - ISO tariff section 10.1.7
 - Similar to NAESB baseline Type 2
 - Referred to as “ISO Type 2” in July 30 paper

Proposed enhancements to current ISO baseline methodologies

- Develop meter generator output (MGO) as a new ISO baseline methodology.
- Develop additional detail regarding the “ISO Type 2” baseline methodology and document that in the appropriate BPMs.

Principles to apply in developing alternative baseline methodologies

- Accuracy – must provide a more accurate estimate of performance than current ISO baseline methodologies for use case in consideration.
- Auditability – must provide the ability for ISO to audit fundamental parameters.
- Ease of implementation – ISO systems and processes must be able to implement the alternative baseline.
- Compliance with NAESB standards – must be compliant with NAESB standards and exist within NAESB approved parameters.

ISO work group will be used to develop proposal

- ISO has asked members of CPUC's Supply Integration Working Group (SIWG) to participate.
- The work group is open to all stakeholders.
- Work group meetings will be noticed through the ESDER.

Non-generator resources (NGR) enhancements

Proposed NGR enhancements in 2015 scope of ESDER

- Update documentation on NGR to capture material and clarifications compiled for April education forums.
- Clarify how ISO uses state of charge in market optimization.
- Evaluate initial state of charge as a submitted parameter in the day-ahead market.
- Evaluate option to not provide energy limits or have ISO co-optimize an NGR based on state of charge.

Expand NGR documentation to capture material and clarifications compiled for April education forums

- Review and update appropriate Business Practice Manuals (BPMs)
 - Clarify power and energy parameters usage
 - Distinguish NGR and NGR with REM option
 - Clarify 50% AGC Optimization
 - Clarify determination of SOC in day ahead and real-time markets

Clarify how ISO uses state of charge (SOC) in market optimization

- Clarify how SOC is used as a physical constraint in the market co-optimization process
- Clarify how SOC is used as a physical constraint in AGC
- Provide examples of bid/award scenarios

Evaluate initial SOC as a submitted parameter in the day-ahead market

- Determine additional benefit to market co-optimization based on a daily bid parameter rather than the default 50% of the resource's defined energy limit
- Determine impact to ISO market systems
- Determine work effort to implement a daily SOC bid parameter

Evaluate option to not provide energy limits or have ISO co-optimize an NGR based on SOC

- Determine grid reliability impact if NGR resources do not provide energy limits or SOC
- Determine impact to ISO EMS and market systems if SOC is not provided when a resource is modeled under NGR
- Determine work effort to implement option that does not constrain an NGR resource by energy limits or SOC

Next Steps

Request for stakeholder comments by August 18, 2015

Comments mailbox initiativecomments@caiso.com

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