



California ISO

WESTERN ENERGY MARKETS

# Briefing on spotlight initiative: Demand and distributed energy market integration

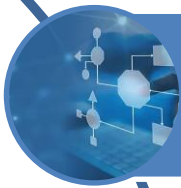
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# The ISO's near-term focus for market design in 2026: Demand and distributed energy market integration initiative



## End-user exports in demand response performance measurement

- Recognize end-user exports within an aggregation, while preserving demand response as a curtailment product.



## Demand flexibility options for EDAM and WEIM entities

- Update market models for demand flexibility to better reflect WEIM and EDAM balancing authority areas, including the consideration of a new reliability-triggered demand response product.



## Large load

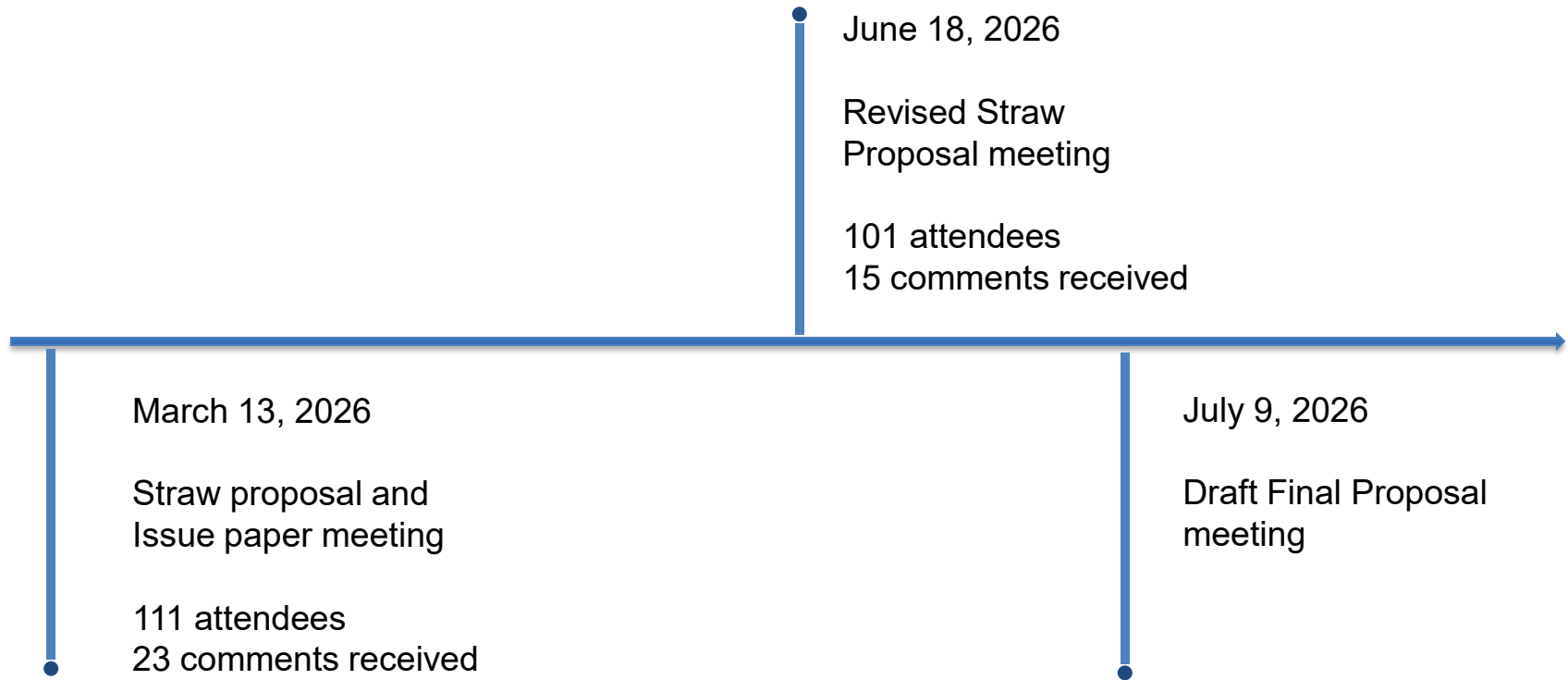
- Explore if changes are needed to accommodate large load, reflected either as supply or demand.



## Real-time demand side and pumped load bidding

- Convene a working group to explore real-time bidding constructs for flexible load and pumped storage resources.

# Track 1 stakeholder engagement and input



# Overview

This proposal would allow the performance of a demand response aggregation to include behind-the-meter exports from utility-authorized end-use customers, provided the resource does not net export.

# Background: Terminology

One demand response resource is made up of many end-users.

## End-user synonyms

Retail customer  
Site  
Location  
Service account  
Local regulatory authority-approved load meter  
End-use customer

**End User:** A consumer of electric power who consumes such power to satisfy a Load directly connected to the ISO Controlled Grid, a Distribution System... and who does not resell the power

*ISO Tariff, Appx A*

## Resource synonyms

Demand response Aggregation\*  
Resource ID  
Proxy Demand Resource Aggregation  
Reliability Demand Response Resource Aggregation



*\*Limited to one sub-load aggregation point (LAP)*

# Background: Terminology - metering

- ISO demand response relies on accurate **metering** of demand response resources to determine how much load is reduced during a dispatch event.
  - This metered data feeds into **demand response energy measurement**, which calculates delivered load reduction by comparing **actual customer load during dispatch** against a historical **baseline**.
  - The **performance evaluation methodology** governs how this comparison is performed, ensuring consistency and accuracy in measuring performance.
- Together, these elements establish the ISO's framework for quantifying, validating, and settling demand response.
  - This links real-time customer load behavior to market participation and compensation.

# Challenge: Today, demand response rules limits the ability to reflect end-user energy exports

Today, if a customer in a demand response aggregation is net exporting (e.g., rooftop solar + battery), their retail load meter data is:

- “Zeroed out” on an individual customer basis.
- Applied regardless of whether the customer is certified to export energy onto the distribution grid.

## ***Today’s rules: illustrative aggregated resource-level demand response energy measurement calculation examples***

| End-use customer                   | 1      | 2      | 3       | 4       | Aggregate Resource Total |
|------------------------------------|--------|--------|---------|---------|--------------------------|
| Baseline value                     | 2.0 kW | 2.0 kW | 2.0 kW  | 2.0 kW  | 8.0 kW                   |
| <i>Actual load during dispatch</i> | 1 kW   | 0.0 kW | -3.0 kW | -3.0 kW | -6 kW                    |
| Zeroed out load during dispatch    | N/A    | N/A    | 0 kW    | 0 kW    |                          |
| DR Energy Measurement              | 1 kW   | 2.0 kW | 2.0 kW  | 2.0 kW  | 7 kW                     |

# Proposed change

Stakeholders are considering a proposal for a new “floor” limiting exports at the level of the demand response aggregation, instead of the end use customer.

- Ensures demand response resources continue to represent demand curtailment in a way that corresponds to market topology.
- Ensures that demand response in ISO markets remains a load curtailment function at the market resource level, while capturing the contributions of individual customers with behind-the-meter storage or generation to the aggregated load curtailment.

## ***Proposed change: illustrative aggregated resource-level demand response energy measurement calculation examples***

| End-use customer                                   | 1      | 2      | 3       | 4       | Aggregate Resource Total |
|--|--------|--------|---------|---------|--------------------------|
| Baseline value                                     | 2.0 kW | 2.0 kW | 2.0 kW  | 2.0 kW  | 8.0 kW                   |
| <i>Actual load during dispatch</i>                 | 1 kW   | 0.0 kW | -3.0 kW | -3.0 kW | -5 kW                    |
| <i>Uncapped demand response energy measurement</i> | 1 kW   | 2.0 kW | 5.0 kW  | 5.0 kW  | 13 kW                    |
| Capped demand response energy measurement          |        |        |         |         | 8.0 kW                   |

# Some stakeholders would like the ISO to go further

Some stakeholders propose to allow exports beyond the aggregate resource ID.

## Market-Wide: Why Track 1 Stops at the Resource Level

- Current demand response aggregations are modeled as load within a sub-LAP and then load distribution factors allocate what response is expected at each pnode.
- Exports beyond the resource ID would require additional policy discussions and more precise modeling of where injections occur.
- Absent changes, there are potential impacts on: 1.) power flow modeling 2.) congestion management 3.) locational pricing

## ISO BAA Deliverability & Resource Adequacy (RA) Considerations

- Deliverability is a finite, shared capability, and exports relying on system load beyond a resource's own customers could affect deliverability available to other resources.
- Exporting DR resources would need: 1.) nodal deliverability studies 2.) appropriate resource modeling and nodal representation 3. Transmission Plan Deliverability allocation

Takeaway: Broader net-exporting concepts would require additional discussions in: (1) DDEMI for market-wide policy, resource modeling, and network modeling considerations; (2) ISO BAA transmission planning processes for deliverability and RA implications.

# Summary

The proposal allows export-authorized customers to contribute their actual performance to demand response measurement while maintaining demand response as a load-curtailement product.

## Benefits

- **Improved recognition of distributed energy resources capability:** Better captures the full response of customers with behind-the-meter storage or generation.
- **Consistent with existing frameworks:** Aligns with current market modeling and ISO balancing authority area deliverability constructs.
- **Maintain performance-based compensation:** Settlements continue to depend on demonstrated performance.

# Stakeholder presentations

- Stakeholders will provide their perspective on different aspects of the proposal that are relevant to them.
- Presenters:
  - Andrew Hoffman, Leap
  - James Weir, Pacific Gas & Electric
  - Jennifer Baak, CalCCA
  - Kerri Schlacter, Black Hills Energy