



Demand and Distributed Energy Market Integration (DDEMI): Policy Development

*Track 1: Revised Straw Proposal:
End-Use Customer Exports in Demand Response Performance
Measurement*

Hybrid Stakeholder meeting

June 18, 2026

1:00 - 4:00 pm

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Where are we in the process?

Initiate



Prioritize objectives and initiatives to develop roadmap

Scope



Define opportunities and scope to reflect diverse goals and objectives

Develop



Stakeholders collaborate to develop solutions and final proposal

Decide



Obtain governance approvals and submit FERC filing as required

Implement



Complete customer readiness, market simulation and go-live

Objectives and Agenda

Objectives:

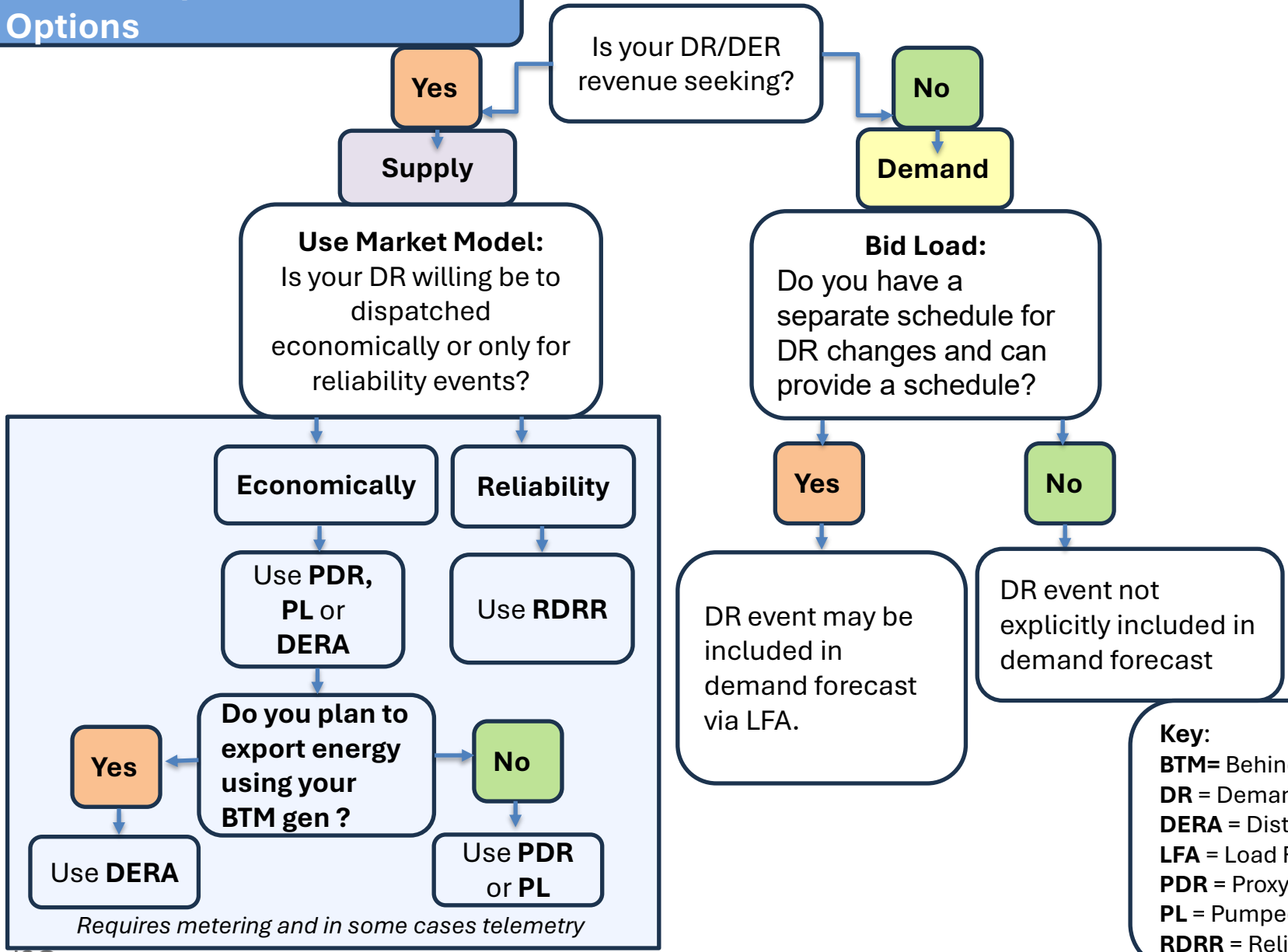
1. Share the Track 1: Revised Straw Proposal: End-Use Customer Exports in Demand Response Performance Measurement
2. Hear clarifying questions and informal feedback from stakeholders that will help the CAISO understand stakeholder perspectives and that will assist stakeholders draft their written comments by **July 1, 2026** and that will help shape the Draft Final Proposal

Agenda

Topic	Presenter	Time
I. Welcome and Introductions	Brenda Marquez	1:00-1:10 PM
II. Background	Anja Gilbert	1:10-1:40 PM
III. Stakeholder Feedback		1:40-2:10 PM
IV. Deliverability Considerations		2:10-2:30 PM
V. Revised Straw Proposal		2:30-3:00 PM
VI. Next steps		3:00-3:10 PM

BACKGROUND

Refresher: Demand Response: Participation Options



Requires metering and in some cases telemetry

Key:
BTM= Behind-the-meter
DR = Demand Response
DERA = Distributed Energy Resource Aggregation
LFA = Load Forecast Adjustment
PDR = Proxy Demand Resource
PL = Pumped Load
RDRR = Reliability Demand Response Resource

DDEMI Guiding Principles

These guiding principles, developed in the DDEMI working group, will help facilitate the assessment of solutions and weigh the potential tradeoffs between approaches:

1. **Efficiency**

- Market optimization produced least cost results while maintaining reliability.

2. **Competition**

- Market rules expand competition to the benefit of consumers and allow flexible demand and smaller-scale resources to participate like conventional, large-scale generators.

3. **Feasibility**

- Operationally feasible; the market solution can be solved within prescribed timelines
- Feasible implementation.

4. **Simplicity**

- Market design elements are not overly complicated

5. **Reliability/Compliance**

- Reliability and compliance standards are reflected in market design

6. **Facilitate state level public policies**, to the extent practicable

Background: Relevant DDEMI working group problem statement

“While PDR is the most compatible CAISO model for behind-the-meter interconnected storage, because it is conceptualized as load curtailment, it does not include any measured export of energy from individual locations to measure performance of the resource via any of existing PEMs—including metering generator output methodology—so that behind-the-meter storage aggregations cannot offer the full resource capability, and PDR performance is artificially capped at levels reflecting conservative estimates of site load, resulting in significant energy from behind-the-meter storage that is unused during events and unavailable to the CAISO market.”

Related concepts

End-user

Retail customer
Site
Location
Service account
LRA-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 CAISO Controlled Grid, a Distribution System... and who does not resell the power

ISO Tariff, Appx A

Resource

PDR
Aggregation



Metering of demand response resources

Demand response energy measurement (DREM)

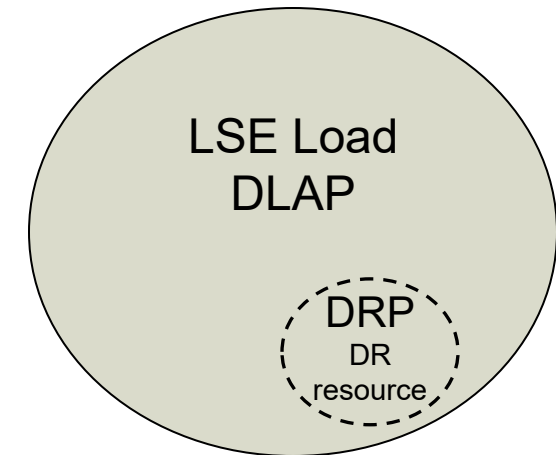
Performance evaluation methodology (PEM)

Actual customer load during dispatch

Demand response resources (including PDR and RDRR)

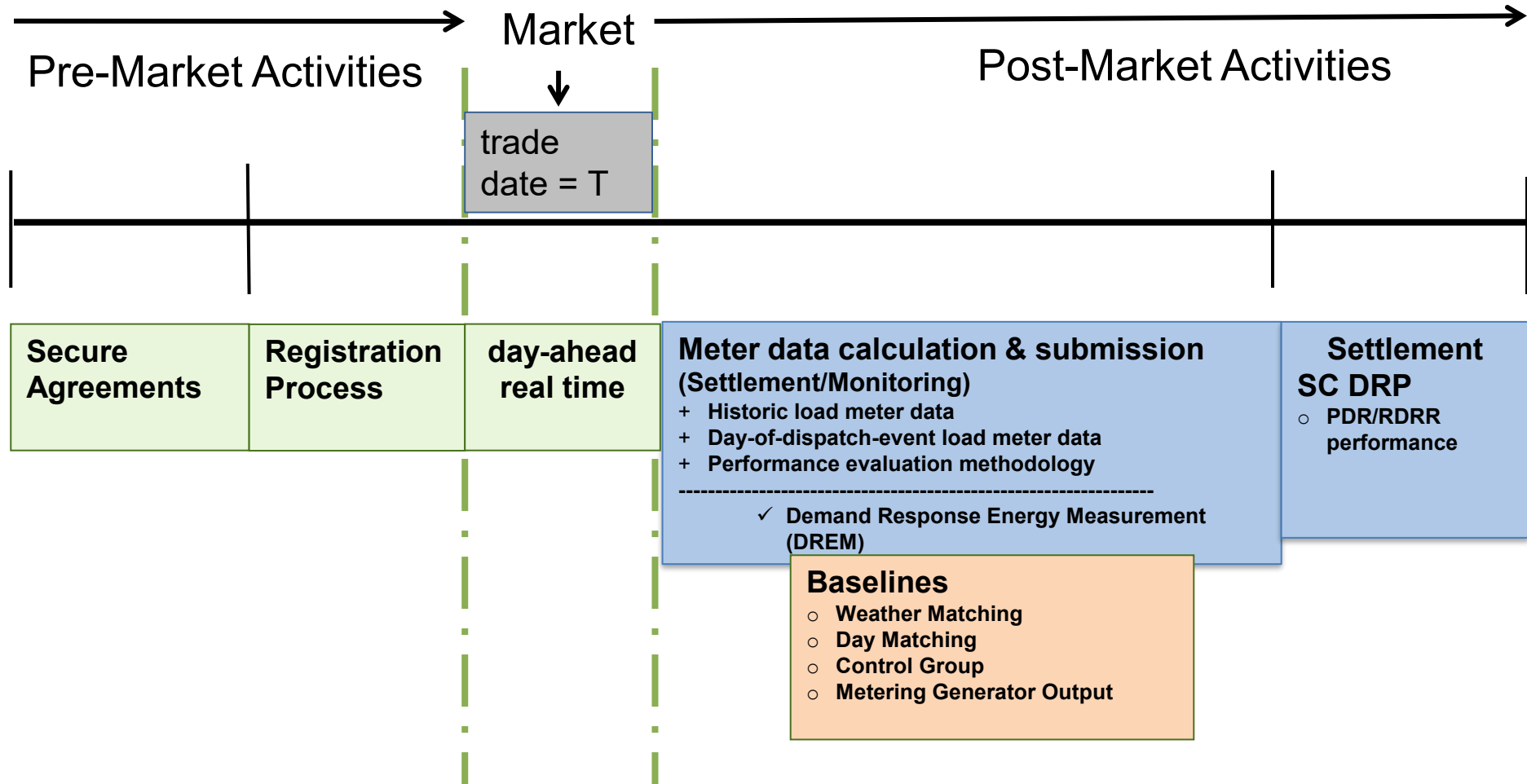
DR provides direct participation of load and simplification in the scheduling of that participation

1. An LSE's load, as normal, is forecasted and scheduled/bid in at the default load aggregation point (DLAP)
2. DR providers (**DRPs**) then offer a **demand response** (curtailable) portion of that load into the ISO *as supply* via a scheduling coordinator (SC)
3. Hence, DR offers as if it were a generator
4. The LSE and the DRP could be:
 - same entity (say, a utility and its utility DR program)
 - or, two separate entities (utility as load serving entity, third party as DRP/scheduling coordinator)
5. Loads aggregated to Sub-LAP



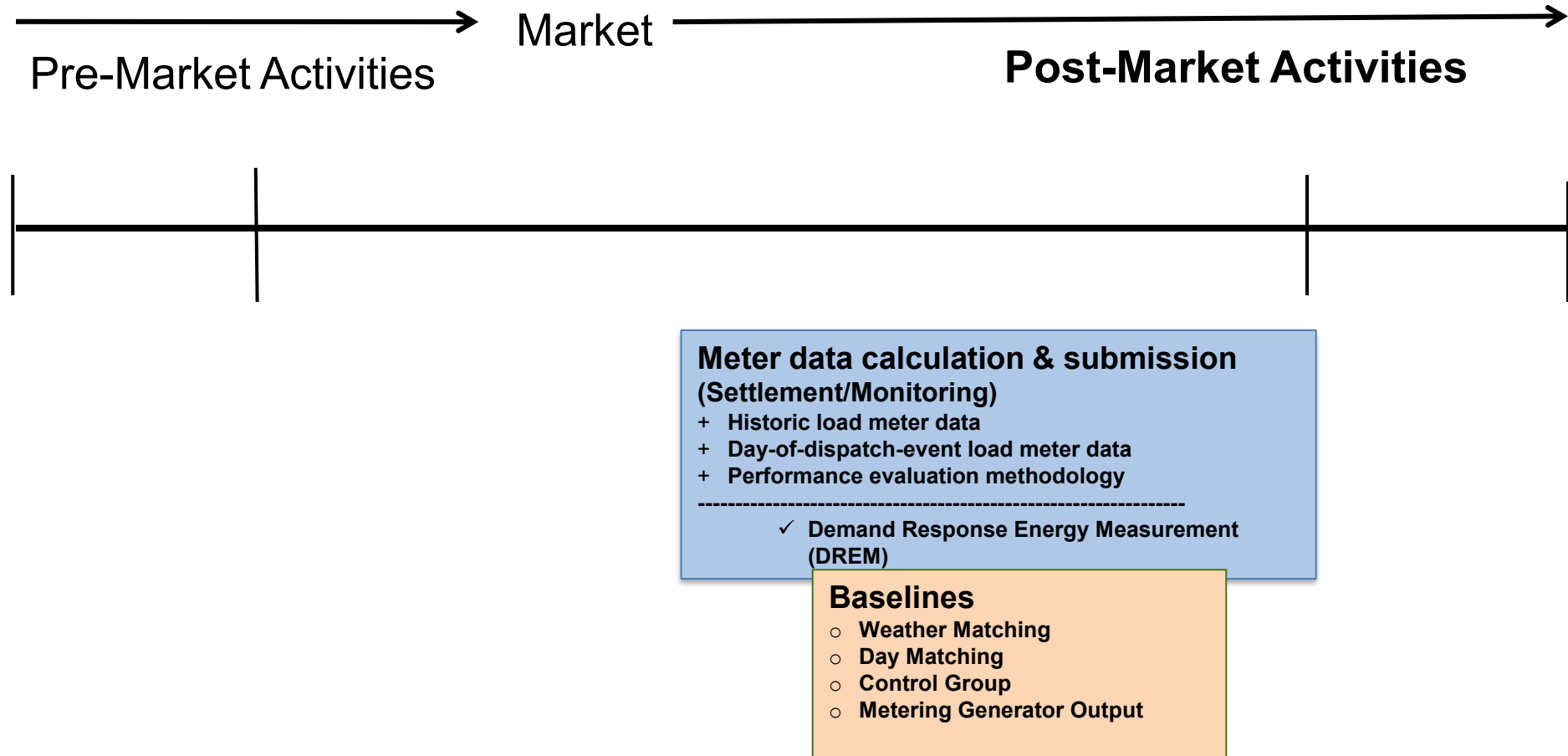
DR resources are SC Metered Entities (SCMEs)

SC submits meter data to CAISO that is calculated by the SC/DRP



DR resources are SC Metered Entities (SCMEs)

SC submits meter data to CAISO that is calculated by the SC/DRP



Today's DR SQMD process limits ability to reflect customer energy exports

Today, during settlement DR quality meter data (SQMD) development process, retail customer load meter data is:

- “Zeroed out” to load curtailment on a **customer-by-customer** basis
- Some customers within an aggregation **may** be customers who are certified to export energy onto distribution grid, some may **not** be, but all must be zeroed out

Today's rules: illustrative DREM calculation for a single end-use customer with behind-the-meter energy storage

	RT interval					
HE 19	1	2	3	4	5	6
Baseline value	1.5 kW	1.75 kW	2.0 kW	2.0 kW	2.0 kW	2.0 kW
Actual load during dispatch	0.5 kW	-3.0 kW	-3.0 kW	-3.0 kW	-3.0 kW	-3.0 kW
Zeroed out load during dispatch	N/A	0.0 kW	0.0 kW	0.0 kW	0.0 kW	0.0 kW
DR Energy Measurement	1.0 kW	1.75 kW	2.0 kW	2.0 kW	2.0 kW	2.0 kW

STAKEHOLDER FEEDBACK

Stakeholder Comments: Recognize End-Use Customer Exports

- Across stakeholders, there was strong agreement that the current prohibition on recognizing exports at the end-use customer level is a fundamental limitation in the DR framework.
- Supporters (majority): Advanced Energy United, CalCCA, CEDMC, CLECA, CPower, Enchanted Rock, Leap, MCE, Nostromo, PG&E, SEIA, Sunrun, Tesla, Voltus, Vote Solar, among others.
- Key arguments:
 - Current rules understate DER and storage capability
 - Reform would unlock additional flexible energy
 - Improve price formation
- Viewed both as:
 - A near-term, implementable fix (metering/accounting change)
 - A foundational step for scaling DER participation

Stakeholder Comments: Zero Out End Use Exports

- A large majority of stakeholders support eliminating the requirement to zero out exports.
 - Advanced Energy United, CalCCA, CEDMC, CLECA, CPower, Enchanted Rock, Leap, MCE, PG&E, SEIA, Sunrun, Tesla, Vote Solar, Voltus,nd Nostromo

Rationale cited:

- Reflects actual system behavior
- Reduces barriers to DR participation
- Enables net export capability across aggregations
- Provides reliability and cost-efficiency benefits

Stakeholder Comments: Scope: Incremental vs Expanded Aggregation

- Near-Term support advancing Track 1 quickly without delay
 - PG&E, MCE, CPower, SEIA, CLECA, Vote Solar, Voltus, and CalCCA
- Expansion of scope over time
 - Advanced Energy United, CalCCA, CEDMC, Leap, CalSSA, Sunrun, Tesla
- Specific proposals:
 - Maximizing portfolio-level net exports
 - Relaxing aggregation-level “zero floor” constraints
 - Up to DRP or sub-LAP

Stakeholder Comments: PEM Approach (PEM vs MGO)

- Broad stakeholder consensus support applying reforms to all PEMs
 - CalCCA, Advanced Energy United, CEDMC, Leap, Tesla, Sunrun, SEIA, Voltus, PG&E
- Rationale: MGO is rarely used, so limiting scope would significantly reduce impact (CalCCA, Advanced Energy United)
- Diverging Utility Positions
 - SDG&E: supports limiting reform to MGO
 - SCE: opposes applying reform to any PEM

Stakeholder Comments: Utility Concerns

- Southern California Edison (SCE)
 - Opposes Track 1
 - Argues it undermines load-curtailement construct of DR and creates risk of double compensation
- San Diego Gas & Electric (SDG&E)
 - Conditionally supportive but cautious. They raise concerns about: gaming, PEM integrity, cost, and UDC review impacts
 - Recommends limiting applicable baselines to MGO
- Broader UDC Concerns (PG&E, SDG&E, SCE)
 - Metering complexity
 - Export verification processes
 - System impacts under Rule 21
 - Administrative burden tied to distribution-level review

Stakeholder Comments: CPUC Energy Division

- Does not oppose the proposal and supports recognizing exports, but with key conditions.
- Key requirements
 - Strong safeguards to prevent double compensation (aligned with NEM/NBT restrictions)
 - Coordination between ISO and CPUC frameworks
 - Alignment with retail tariffs and DR program rules
- Additional concerns raised uniquely by CPUC
 - Load shifting effects to neighboring hours being unmodeled
 - Equity considerations in allocation of DR value

Stakeholder Comments: Allocation of Export Value Across Customers

- Broad Stakeholder Agreement to allow DRPs/SCs to determine allocation of export value
 - Advanced Energy United, CalCCA, Leap, Tesla, Sunrun, SEIA, and Voltus
- Caveats from Utilities and the CPUC
 - CPUC Energy Division, SCE, SDG&E, PG&E raise concerns about:
 - Customer equity
 - Incentive design and fairness

Stakeholder Comments: Interconnection Requirements

- Strong consensus that only customers with Rule 21 export interconnection agreements should be eligible to provide exports
 - Advanced Energy United, CalCCA, PG&E, SEIA, Tesla, Sunrun, CEDMC
- Implementation concerns raised by PG&E, SDG&E, and SCE:
 - Export verification complexity
 - Metering alignment challenges
 - Distribution system impacts and review processes

Stakeholder Comments: CAISO Department of Market Monitoring

- DMM supports improved DR modeling and recognizing exports but warns against using DR pathways to bypass interconnection processes.
 - The concern arises where generation technologies could potentially use the DR participation pathway to avoid interconnection queue review, system impact studies, and cost responsibility applicable to generation resources.
- Emphasizes:
 - Maintaining market integrity and cost responsibility
 - Counterfactual should incorporate regular customer behavior
 - Ensuring reforms improve actual DR availability and performance

Addressing Stakeholder Concern: Incentive to Enroll Non-Responsive Load

Some stakeholders have questioned if this proposal creates an incentive to enroll non-responsive load

	Before dispatch	During Dispatch
Customer A	5 MW load	5 MW load; no load reduction
Customer B	5 MW load curtailment + 5 MW battery	Load curtailed to 0 MW + Battery exports 5 MW
Baseline load	10 MW	10 MW
Net Load	N/A	0 MW
Measured Performance	N/A	10 MW (= 10 - 0)

ISO Response

- **Performance-based construct unchanged:** CAISO compensates demonstrated performance; resources must produce measurable deviation from baseline
- **No incentive for non-responsive load:** Non-responsive load alone does not create performance
- **RAAIM accountability remains:** To the extent they are subject to RAAIM, non-performance penalties under RAAIM will continue to apply regardless of enrollment composition
- **No change to qualification or counting rules:** Existing LRA/LSE frameworks continue to determine eligible resource types and capacity counting

ISO BAA DELIVERABILITY CONSIDERATIONS

ISO BAA Deliverability Framework

- Applies only within ISO BAA (not other BAAs)
- Deliverability ensures:
 - Generation can run at peak load
 - Excess energy can be exported reliably
- Deliverability is:
 - Finite and shared across resources
 - Determined through: Interconnection studies & contingency analysis
 - Required for exporting resources to receive an NQC

ISO BAA Deliverability Framework: ISO BAA Export Limits for DR

- The ISO BAA is not allowing exports beyond:
 - A resource's own load, or
 - Sub-LAP load
- Rationale:
 - Additional exports beyond a resource's own load rely on general load already used by others
 - Could reduce deliverability for existing resources

Policy implication:

- DR (PDR/RDRR) must:
 - Remain load curtailment-only at resource level
- To export beyond load:
 - Must obtain deliverability by entering generator interconnection queue
 - Obtain transmission planning deliverability (TPD) allocation



CAISO BAA Sub-Lap Map

REVISED STRAW PROPOSAL: TRACK 1

End-use exports in demand response performance measurement

Key Attributes of the Straw Proposal

Element	Revised Straw Proposal
BAA Eligibility	All
Market Model eligibility	PDR and RDRR
End-use exports (<i>customer-level</i>)	Recognized
Aggregation floor (<i>DR Aggregation/ Resource ID-level</i>)	Maintained
Eligible customers	UDC export-authorized only
PEM applicability	All PEMs
ISO BAA deliverability treatment	Unchanged
SC responsibility	Submitting meter data Determining which resources to zero out if total resource exceeds load
UDC role	Export verification

Revised straw proposal

Key change: Remove the existing requirement for SCs to set customer load meter data during DR dispatch intervals to a minimum of zero during periods when those customers are exporting energy onto the distribution system.

This is implemented through two coordinated changes:

Remove customer-level export restriction

- Only for those customers that are already approved for export onto the distribution system
- UDC review in DRRS verifies export eligibility

Introduce a new limit to “zero out” exports at the resource-level

- Limit applies at the aggregate resource level when reflecting customer exports
- SC determines allocation of exports across customers within the resource
- Limit would apply to all PEMs when reflecting customer-level exports

Takeaway: This proposal shifts constraint from the end-use customer to the resource-level

Revised straw proposal

Key change: Allow approved exporting customers to reflect exports in meter data during DR dispatch, rather than requiring values to be “zeroed out.”

Proposed change: illustrative DREM calculation for a single end-use customer with behind-the-meter energy storage

	RT interval					
HE 19	1	2	3	4	5	6
Baseline value	1.5 kW	1.75 kW	2.0 kW	2.0 kW	2.0 kW	2.0 kW
Actual load during dispatch	0.5 kW	-3.0 kW	-3.0 kW	-3.0 kW	-3.0 kW	-3.0 kW
DR Energy Measurement	1.0 kW	4.75 kW	5.0 kW	5.0 kW	5.0 kW	5.0 kW

Revised straw proposal

A “floor” limiting exports at the level of the **DR aggregation**

- Ensures DR 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 DREM calculation examples

End-use customer	1	2	3	4	Total
Baseline value	2.0 kW	2.0 kW	2.0 kW	2.0 kW	8.0 kW
<i>Actual load during dispatch</i>	0.5 kW	0.0 kW	-3.0 kW	-3.0 kW	-5.5 kW
<i>Uncapped DREM</i>	1.5 kW	2.0 kW	5.0 kW	5.0 kW	13.5 kW
Capped load during dispatch					0.0 kW
Capped DREM					8.0 kW

End-use customer	A	B	C	D	Total
Baseline value	2.0 kW	2.0 kW	2.0 kW	2.0 kW	8.0 kW
<i>Actual load during dispatch</i>	-2.0 kW	-2.0 kW	-2.0 kW	-2.0 kW	-8.0 kW
<i>Uncapped DREM</i>	4.0 kW	4.0 kW	4.0 kW	4.0 kW	16.0 kW
Capped load during dispatch					0.0 kW
Capped DREM					8.0 kW

Revised straw proposal: What is changing

Performance evaluation methodology impacts

- While ISO tariff today specifically requires zeroing out exporting intervals for the MGO PEM, the proposal was developed to apply to **all** PEMs (day matching, weather matching, MGO, etc.)
- Limiting the change to MGO would have minimal impact, as most DR resources use day-matching
- **Proposal:** Apply updated treatment across all PEMs

Individual end-use customer treatment

- The proposal introduces a rule to replace intervals where **aggregated** customer meter data is negative (exporting) with zero values, but after summing load data - does not require specifying **which** individual exporting customers should be zeroed out
- SCs submit **aggregated** meter data for settlement. No ISO business function requires specifying individual customers
- **Proposal:** Maintain SC as entity responsible for choosing which customers are zeroed out

Export interconnection

- This change would **only** be allowed for customers that are approved for export onto the distribution system (e.g., Rule 21 Export interconnection or similar)
- UDCs have visibility into which service accounts are participating and can compare these records with interconnection status
- **Proposal:** Add DRRS attribute identifying which end-use customers are authorized to export

Revised straw proposal: How is it implemented

Update PEM and DREM methodologies

- Apply revised performance evaluation and DREM calculations across all PEMs
- Ensure baseline reflects typical export behavior

Targeted CAISO metering process change

- Updates how Scheduling Coordinators (SCs) calculate SQMD

Implementation primarily impacts SCs

- SCs are responsible for calculating and reporting SQMD under the revised methodology

In Summary

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

Benefits

- **Improved visibility of DER capability:** Better captures the full response of customers with behind-the-meter storage or generation
- **Consistent with existing frameworks:** Aligns with current ISO BAA deliverability and market design constructs
- **No change to performance-based compensation:** Settlements continue to depend on demonstrated performance

Draft Timeline and Next Steps

- **July 1: Comments Due on Revised Straw Proposal**
- July 8: Publish Draft Final Proposal
- July 9: Stakeholder meeting on Draft Final Proposal
- July 16: Comments Due on Draft Final Proposal
- July 22: Publish Final Proposal
- August 25-26: DDEMI Track 1 vote at Board Meeting

Aiming for 2027 implementation

Next Steps



Comments due July 1, 2026, via ISO Commenting Tool



Publish Draft Final Proposal on July 8, with Stakeholder Meeting July 9

Please note that the dates above are tentative until the CAISO publishes a notice formally confirming them



[Demand and distributed energy market](#)




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GUESTS:
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Welcome reception - Oct. 5

at Kimpton Sawyer Hotel, Sacramento, CA

Symposium program - Oct. 6

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