Reliability Demand Response Resource Bidding Enhancements: *Draft Final Proposal & Second Revised Straw Proposal*

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Policy Development

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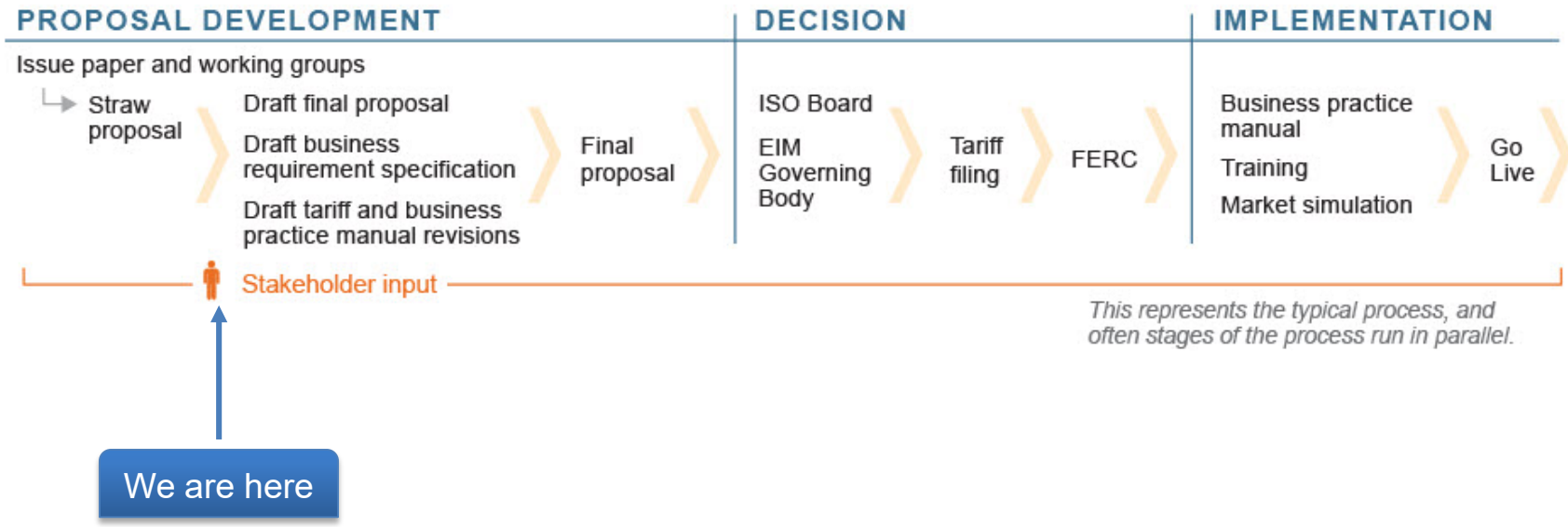
Agenda

Time	Topic	Presenter
3:00-3:10	Welcome and Introduction	Brenda Corona
3:10-3:20	Initiative Bifurcation	Anja Gilbert
3:20-3:40	Track 1: Aligning RDRR Bidding Rules with Real Time Pricing Conditions, Consistent with Order 831	Danielle Tavel
3:40-4:20	Track 2: Infeasible Dispatch and Discrete RDRR Registration	Anja Gilbert
4:20-4:30	EIM Governing Body Role	Anja Gilbert
4:30-4:50	Additional Q&A	Brenda Corona
4:50-5:00	Next Steps	Brenda Corona

CAISO Policy Initiative Stakeholder Process



INITIATIVE BIFURCATION

Initiative Bifurcation

In order to accommodate varying policy and implementation sensitivities, the CAISO has bifurcated the RDRR Bidding Enhancements Initiative.

- Track 1: Draft Final Proposal: Aligning RDRR bidding rules with real-time price conditions, consistent with FERC Order No. 831
  - March BOG; Summer 2022 Implementation
- Track 2 Second Revised Straw Proposal: 1.)Adjusting discrete RDRRs operating range to reflect operational capabilities in real time, and 2.) Modifying the discrete RDRR size cap
  - May BOG; TBD Implementation

TRACK 1: ALIGNING REAL TIME BIDDING RULES WITH FERC ORDER 831

FERC Order No. 831 Background

- 2016 FERC issued Order No. 831 required ISO/RTOs to revise their tariffs to raise energy bid cap from $1,000/MWh to $2,000/MWh
  - Required ISO/RTOs verify generator costs for bids above $1,000/MWh before the market run to be eligible to set energy prices

- June 2021 CAISO FERC Order No. 831 – Import Bidding and Market Parameters Initiative activated
  - Implemented various tariff revisions and system updates to accommodate bidding flexibility above $1,000/MWh

RDRR Bidding rules under the FERC Order No. 831 paradigm

- Currently, RDRR in real time, are required to submit bids at or above 95% of the bid cap ($950/MWh)
  - RDRR can be released for dispatch when an EEA 2 notice is issued in real-time
  - Under FERC Order No. 831, the bid cap is raised from $1,000/MWh to $2,000/MWh only during periods when either:
    - Resource-specific resources have submitted a cost-verified energy bid greater than $1,000/MWh
    - The CAISO-calculated maximum allowable import bid price is greater than $1,000/MWh
- When the bid cap is set to $2,000/MWh RDRR bids are still capped at $1,000/MWh unless they submit a pre-market manual reference level change request based on higher operating or fuel costs

Draft Final Proposal

- Continue to propose:
  1. To maintain the existing bidding structure for RDRR when bid cap is $1,000/MWh
  2. In real time, when bid cap is raised to $2,000/MWh, propose to require RDRR to bid at least 95% of the hard bid cap ($1,900/MWh) without additional cost-justification support
  3. To adjust all RDRR bids when the bid cap changes by preserving the percentage of the bid cap originally submitted by the SC
     - i.e. If the original bid was 95% of the soft energy bid cap and the bid cap increases to $2000, the market would adjust the bid to be 95% of $2000
     - This proposal will hold true when the bid cap is adjusted downward as well

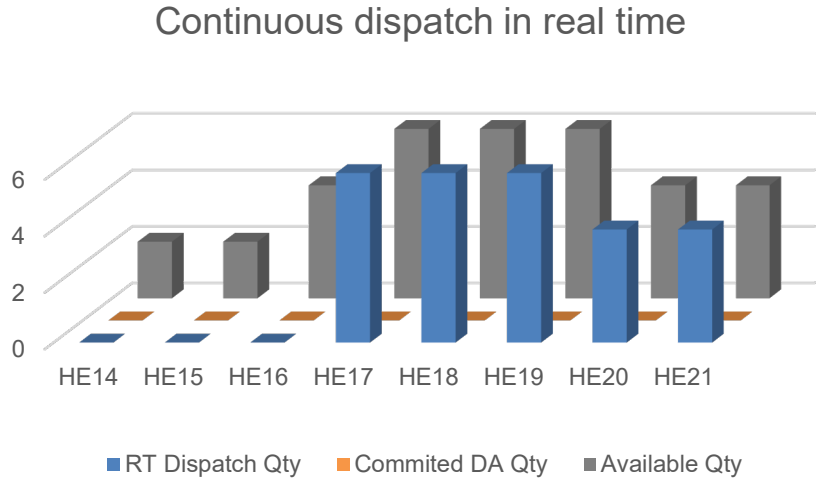
Real-time market RDRR bidding example

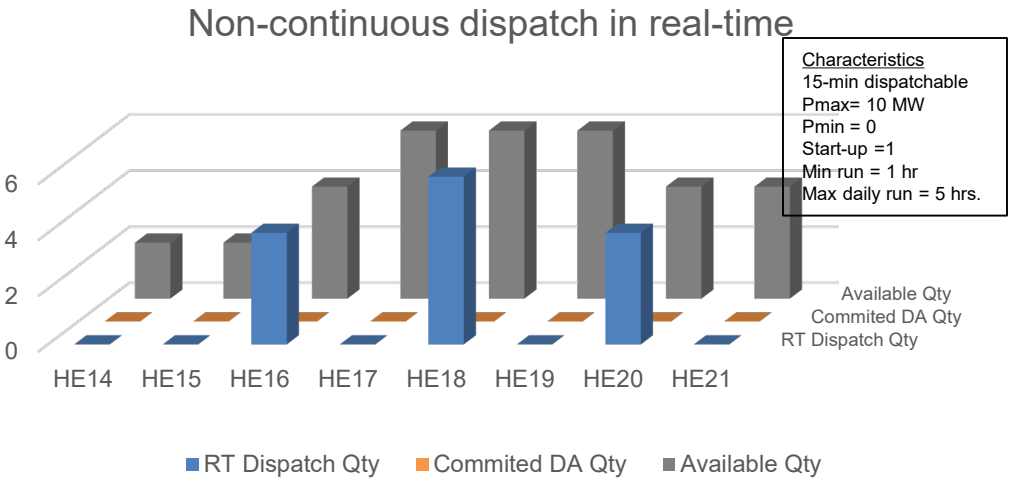
- Assume the conditions to raise the energy bid cap to $2,000/MWh in the day-ahead market have not been met
- In the real-time market for hour-ending 17:
  - A resource-specific resource has submitted a cost-verified energy bid greater than $1,000/MWh at 14:00 for hour-ending 17
    - Triggers the energy bid cap to raise from $1,000/MWh to $2,000/MWh
  - SC has submitted an RDRR bid at 97% of the soft energy bid cap ($970/MWh)
  - SC's have until 14:45 (close of RT hour-ending 17) to re-submit RDRR bids in accordance with the change in bid cap
    - If no action is taken by SC to change RDRR bid to be at least 95% of $2,000/MWh; SIBR will automatically adjust their bid to be 97% of the hard energy bid cap ($1,940/MWh)

TRACK 2: RDRR INFEASIBLE DISPATCH

Background: Real Time RDRR Continuous or Continuous Dispatch

- In real time RDRRs can be dispatched either continuously or non-continuously (also referred to as “infeasible” by market participants)
- In general, a resource operating at zero will be considered on-line, even at zero, unless it is at zero for the entire period





Background Continued

- Today, with a $0/MWh minimum load cost (MLC) RDRR appears “free” and results in an infeasible dispatch
  - With CAISO’s Summer Enhancements implemented, RDRR s more likely to be dispatched by the market
- CAISO first sought to fix the real time infeasible RDRR dispatch issue by examining if there were MLCs that could reflect RDRRs actual costs to reach minimum load
  - However, as the RDRR settlement outlines, RDRR is not “price responsive” but is economically dispatched once triggered
  - In addition, the retail tariffs that underpin RDRR do not incorporate the concept of minimum load, only a single load level that must be reached

Second RSP Proposal

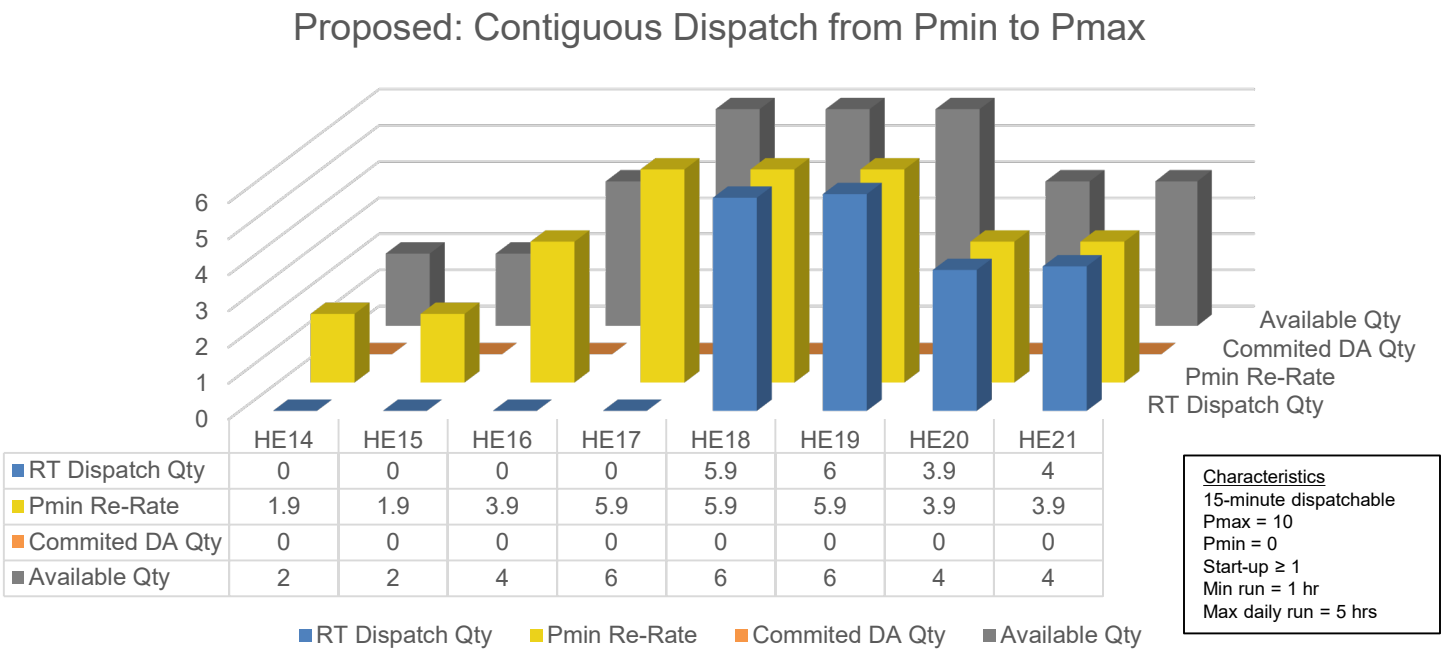
- The CAISO continues to propose to fix the infeasible dispatch issue in the optimization for discrete RDRR resources by:
  1. Setting the Pmin to a value just below the upper economic limit, using existing Pmin-rerate functionality
  2. Adding the value (bid price)*(economic limit) to the existing MLC

  This will enable the market to commit discrete RDRR, when RDRR is activated, like a generator with a non-zero Pmin
  - Pmin re-rate and MLC for pre-qualification of bid cost recovery will be published
  - Only 5-minute and 15-minute RDRR is eligible for BCR

Example: Enabling contiguous dispatch

Process:

- Re-rate the minimum operating level (Pmin) to below the upper economic limit
- Set the minimum load cost to ($950/MWh) * (5.9MW) = $5,605 /hour



	HE14	HE15	HE16	HE17	HE18	HE19	HE20	HE21
RT Dispatch Qty	0	0	0	0	5.9	6	3.9	4
Pmin Re-Rate	1.9	1.9	3.9	5.9	5.9	5.9	3.9	3.9
Commited DA Qty	0	0	0	0	0	0	0	0
Available Qty	2	2	4	6	6	6	4	4

Characteristics
15-minute dispatchable
Pmax = 10
Pmin = 0
Start-up ≥ 1
Min run = 1 hr
Max daily run = 5 hrs

In HE 18 when the resource is dispatched to 5.9 MW, their minimum operating limit of 5.9 and minimum load cost of $ 5,605 will be eligible for Bid Cost Recovery consideration.

TRACK 2: RDRR REGISTRATION

Background: RDRR Discrete Cap

RDRRs may register as either continuous or discrete, depending on their abilities:

- Continuous (non-discrete) registration indicates that a resource can operate anywhere between its Pmin and Pmax, based on the cleared bid quantity. There is no MW cap on continuous RDRR.
- Discrete registration indicates the resource has one bid segment and when dispatched will generate to its Pmax. There is a 50 MW cap on discrete RDRR.

Stakeholders have requested CAISO increase/remove the current 50MW cap for discrete RDRR registration:

- RDRRs either operate together in one sub-LAP but due to the 50 MW cap are forced to be represented separately, or are larger than 50MW and cannot be split due to safety and operational reasons
- This results in challenges for some Scheduling Coordinators to dispatch their programs

RDRR Discrete Cap: Discrete to Continuous Issues

- Imbalance Issues:
  - Discrete resources are treated as continuous in the pricing run and discrete in the scheduling run
  - The market may need to dispatch a resource at 5MW when in reality the resource can be at 50MW
  - In aggregate, this can create an imbalance that would then need to be absorbed in the CAISO's system through ACE or regulation
- Pricing Issues:
  - When a discrete resource sets prices in the pricing run, it will generally set a higher price than the price that the final, most expensive continuous resource dispatched in the scheduling run would have set
  - These final continuous resources have the incentive to deviate up from the ISO's dispatch

Pmin Re-Rate Interaction with Discrete Registration

- The imbalance issue identified as a challenge with increasing the cap is mitigated if the Pmin re-rate functionality is implemented
- The Pmin re-rate changes what the pricing run sees as available and largely eliminates the imbalance between the pricing run and scheduling run.
- For example, if we have a 50 MW RDRR:

	Pricing Run Sees	Scheduling Run Dispatches	Potential Imbalance
Without Pmin Re-Rate	Continuous 0-50 MW May pick up 5 MW	50 MW	45 MW
With Pmin Re-Rate	Continuous 49.9- 50 MW May pick up 49.9 MW	50 MW	0.1 MW

Second RSP Proposal:

- In light of the Pmin re-rate functionality mitigating the discrete to continuous imbalance, the CAISO is proposing to double the cap by increasing it to 100 MW. The increase to the discrete cap is conditional on the Pmin re-rate functionality being implemented.
- Additionally, discrete RDRRs in excess of 100 MW may apply annually for Master File registration exceptions to the cap.
  - Applicability: Resources from a single load source that cannot be operationally or safely split.
  - Criteria: Source of load curtailment. Additional criteria may also be developed.

EIM GOVERNING BODY ROLE

EIM Governing Body will have joint authority on RDRR Bidding Enhancements

- This bifurcated initiative proposes changes to two separate elements of RDRR: 1.) options for bidding RDRR in the real-time market and 2.) representation of RDRR.

- EIM balancing authority areas may use the RDRR model assuming they have approval from their local regulatory authority and meet the requirements of RDRR participation.

- Stakeholders are encouraged to submit a response to the EIM classification of this initiative in their written comments.

NEXT STEPS

Timeline

Date	Track 1	Track 2
1/26/2022	Publish draft final proposal	Publish second revised straw proposal
2/2/2022	Stakeholder conference call on draft final proposal	Stakeholder conference call on second revised straw proposal
2/16/2022	Stakeholder comments due on draft final proposal	Stakeholder comments due on second revised straw proposal
2/22/2022	Publish final proposal and draft tariff language	
3/9/2022	Stakeholder comments due on final proposal and draft tariff language	Publish draft final proposal
3/15/2022	EIM Governing Body	
3/17/2022	Board of Governors Meeting	
3/16/20222		Stakeholder conference call on draft final proposal
3/25/2022		Stakeholder comments due on draft final proposal
4/12/2022		Publish final proposal an draft tariff language
4/18/2022		Stakeholder conference call on final proposal an draft tariff language
4/28/2022		Comments due on final proposal an draft tariff language
5/10/2022		EIM Governing Body
5/12/2022		Board of Governors Meeting

Comments

- Stakeholders are asked to submit written comments by February 16, 2022 through the commenting tool.
- A comment template will be posted on the CAISO's initiative webpage here: https://stakeholdercenter.caiso.com/StakeholderInitiatives/Reliability-demand-response-resource-bidding-enhancements