

EIM Resource Sufficiency Workshop

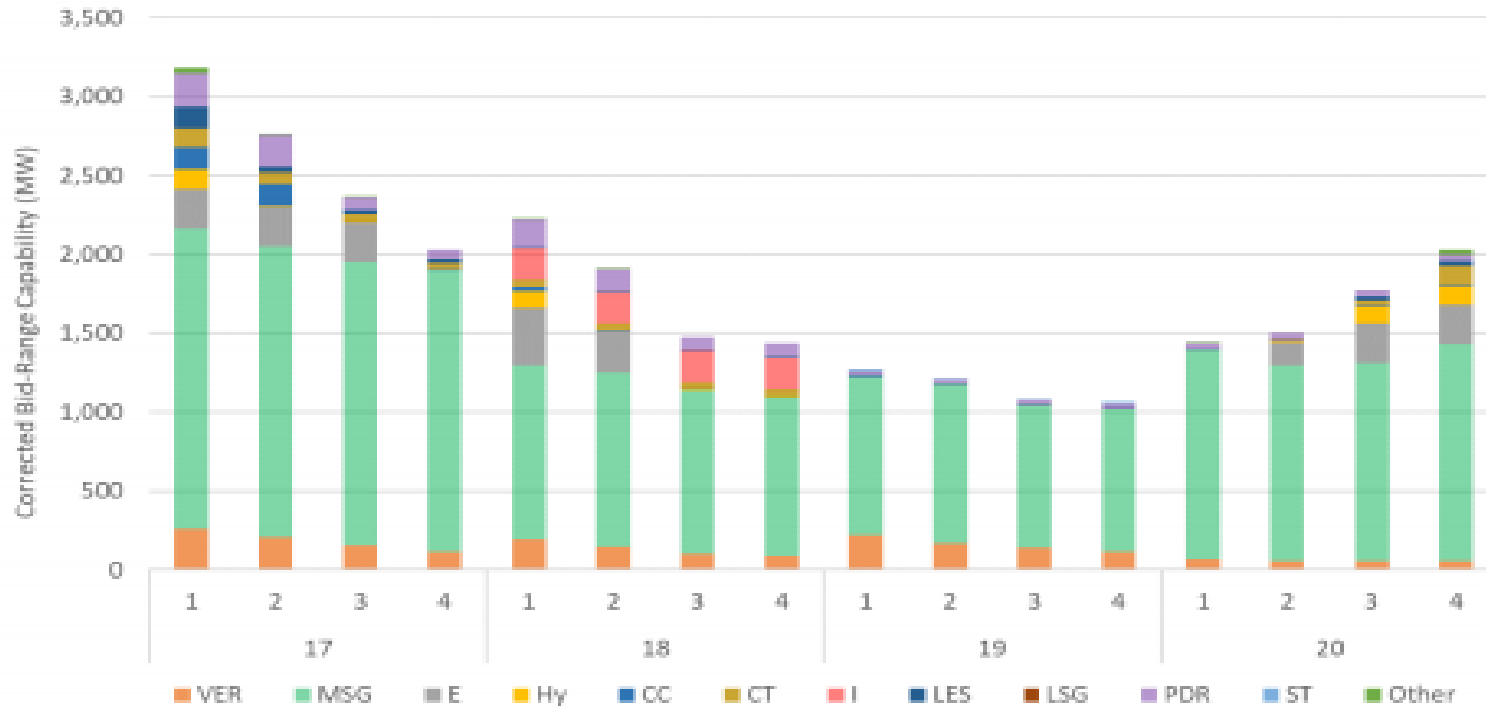
June 25 & 28 2021

Arizona Public Service
Bonneville Power Administration
Portland General Electric
Powerex

Specific Enhancements to Improve Accuracy of RSE

Capacity Should Be Capable of Performing in RT

Figure 3 - August 14, 2020 Overestimation



Source: CAISO Issue Paper, page 12

- CAISO’s analysis of August 14th 2020 illustrates the potential for over-stated capacity to be included in BRCT
- Magnitude of over-stated capacity on August 14th was larger than other days based on a long-start resource attempting to return from outage
- Illustrates the need to more accurately measure whether the resource is realistically available in real-time

Capacity Should Be Capable of Performing in RT

- Principle: BRCT should measure whether each entity has sufficient available capacity in real-time to meet its load without relying on EIM Transfers
- General rule: capacity should reflect the maximum achievable output within the real-time market horizon (i.e., approximately 2 hours)
 - excluding supply that is not truly available in real-time is necessary to accurately evaluate each BAA's ability to meet its own obligations without leaning on the EIM
 - will result in a more consistent application between EIM Entities and the CAISO BAA (as EIM Entities are expected to provide feasible base schedules each hour)
 - consistent with efficient market dispatch in real-time

Capacity Should Be Capable of Performing in RT

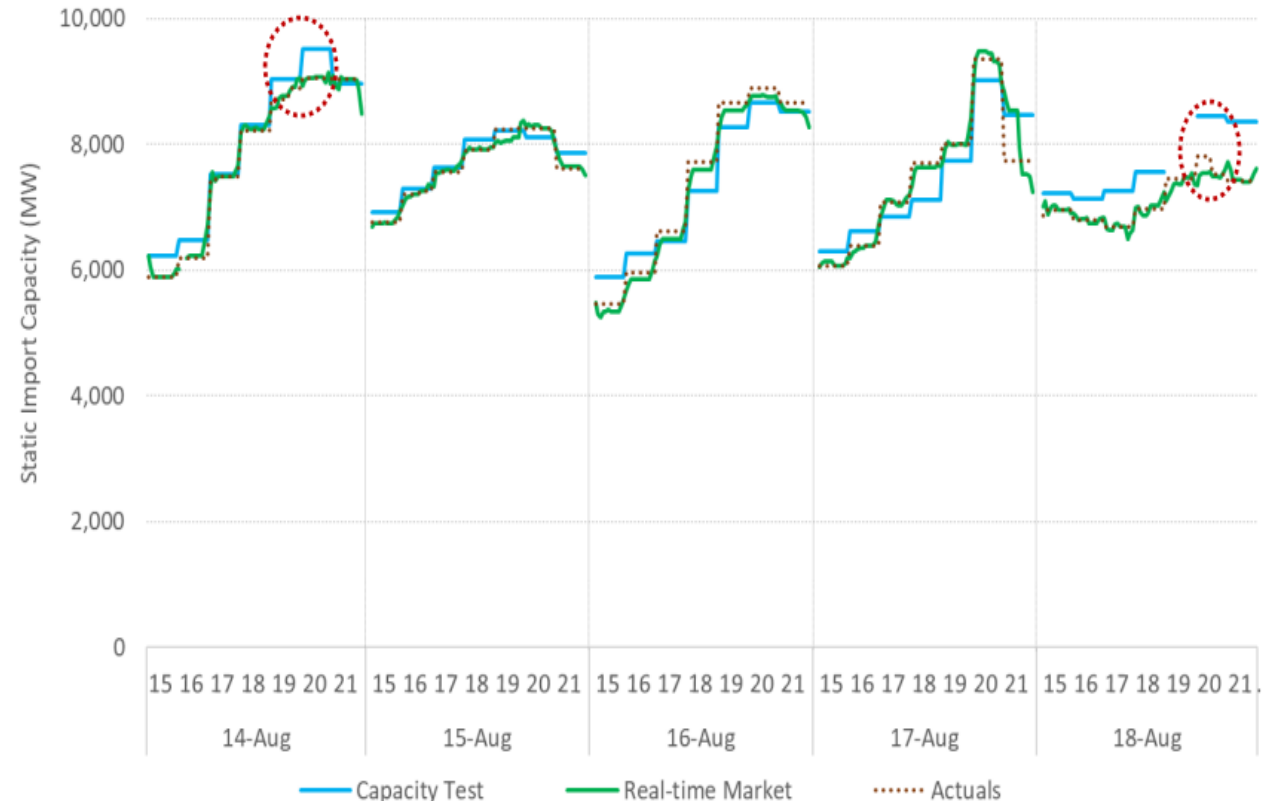
	Online <u>and</u> Offline		<u>Online</u> Only		
Attribute	Fast Start	Short-Start	Medium Start	Long-Start	Extremely Long-Start
Start Up Time	less than or equal to 10 minutes	less than 2 hours	between 2 & 5 hours	between 5 & 18 hours	greater than 18 hours
Cycle Time		less than or equal to 270 mins	less than or equal to 270 mins		
Real-Time Applications					
RTUC	Commit/ Advisory	Commit/ Advisory	No Commit	No Commit	No Commit
STUC	Commit/ Advisory	Commit/ Advisory	Commit	No Commit	No Commit

Capacity Should Be Capable of Performing in RT

Resource	Included in BRCT?	Quantity
Online resources	Yes	Maximum achievable output within RT horizon (i.e., within approx. 2 hours)
Offline resources that can be committed by RTUC	Yes	Maximum achievable output within RT horizon (i.e., within approx. 2 hours)
Offline resources with start-time beyond RTUC	No	Not included
Offline resources returning from outages	Yes	Potentially included, but limited to realistic output within next 60 minutes
MSG Resources	Yes	Limited to configurations that can be achieved within RTUC horizon (i.e., within approx. 2 hours)
Exceptional Dispatch	Yes	Limited to fixed ED quantity

Imports Should Be Identifiable

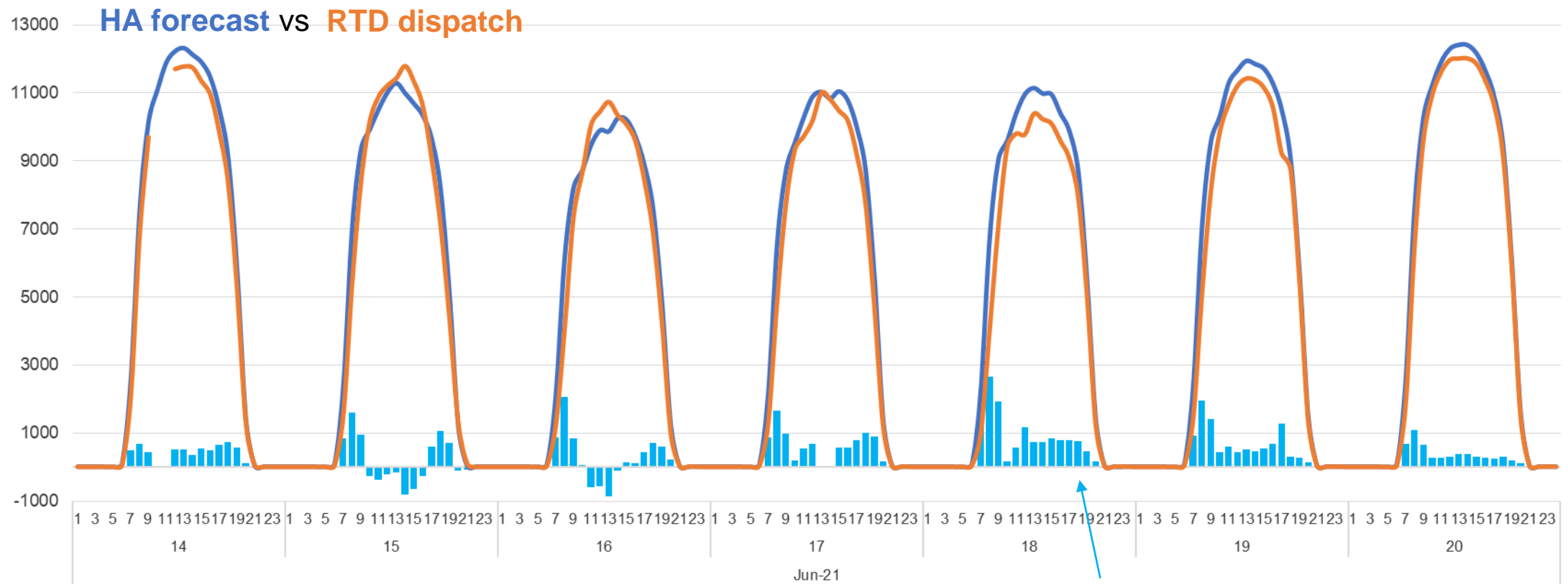
- EIM Entities only include imports with an identified source
- CAISO BAA includes all cleared HASP import schedules at T-40
 - Can include speculative bids that are not supported by real supply
- Delivery failures associated with speculative supply bids are not random: risk is elevated during tight supply conditions
- Only imports supported by an identified resource should be included by CAISO BAA (e.g., using e-Tags or other form of reliable verification)



Partial deliveries from imports cleared in HASP resulted in some deltas between the capacity test and the real-time capacity

Solar forecast error

- CAISO previously identified over-stated solar during peak hours of August 2020 heat event
- Similar results in June 2021: solar output appears to be systemically over-stated

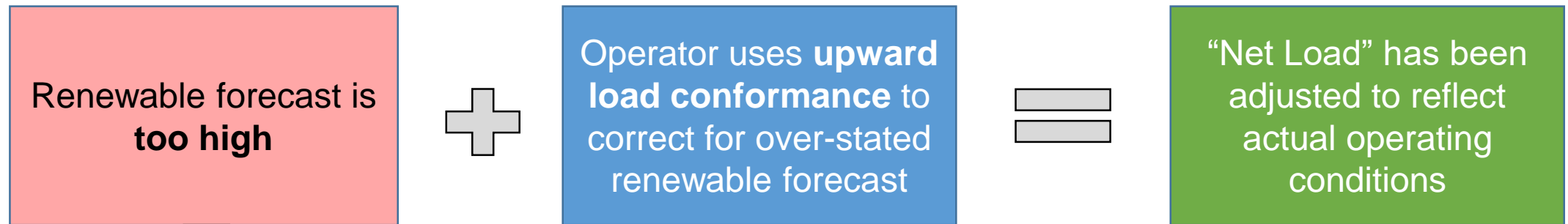


Source: CAISO OASIS

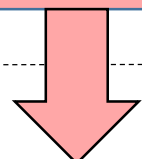
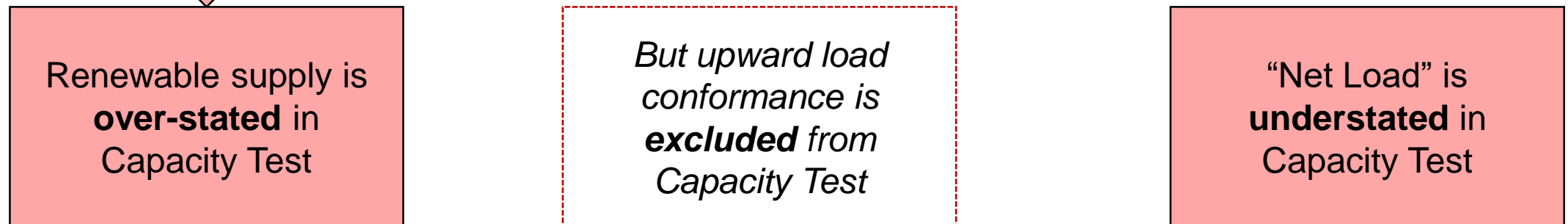
Forecast error

Consider Including Load Conformance in the RSE

Market Operations



RSE

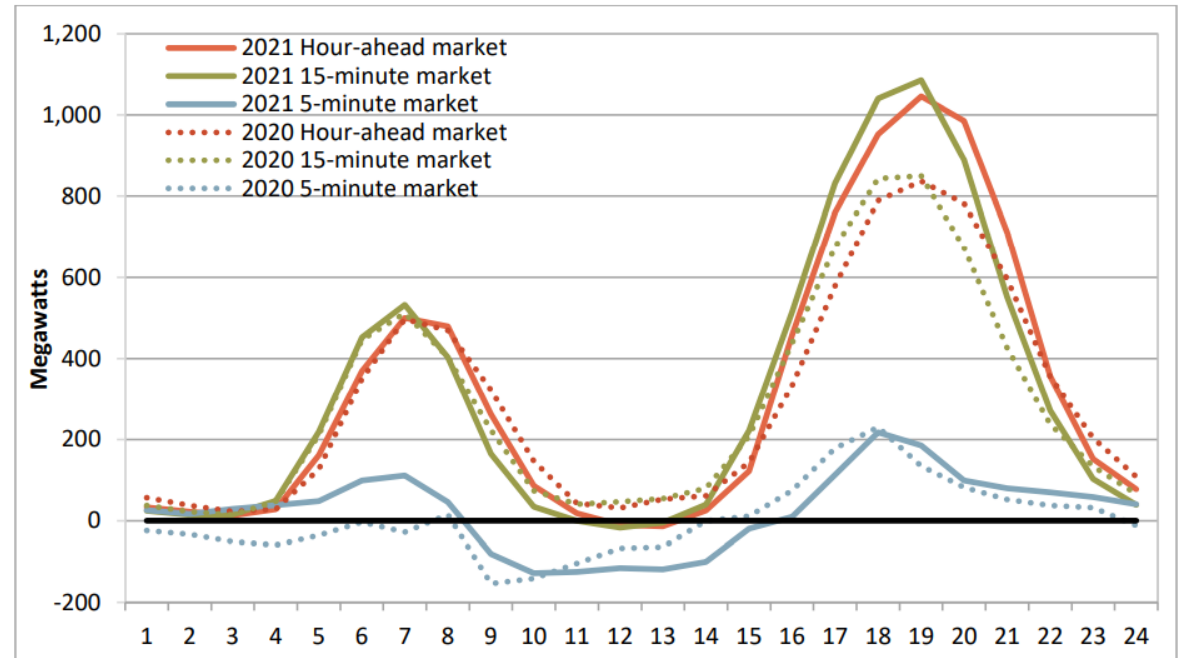


Consider Including Load Conformance in the RSE

- Load conformance is a manual adjustment used to correct for over/under-forecasted load, renewable output, and to address net load ramps
- Currently, BRCT load forecast does not include the impact of load conformance and can result in a systemic understatement of the forecast used for EIM dispatch
- Consider including the quantity of load conformance applied to the FMM in the BRCT
- FMM conformance plays a direct role in the dispatch of EIM resources, including determining EIM Transfers between BAAs

Load conformance in CAISO BAA occurs systemically in the upward direction during peak hours:

Figure 1.46 Average hourly imbalance conformance adjustment (Q1 2020 – Q1 2021)



Source: DMM Q1 2021 Report on Market Issues and Performance

Entities should be able to accurately reflect demand response in EIM RSE

- Like CAISO, many other EIM Entities have demand response programs
- Often not modeled directly in EIM market systems and cannot be counted toward sufficiency requirements - this requires that EIM Entities procure capacity to cover their DR resources that are not counted in the RSE
 - 5% ALFS threshold is too high and prevents DR from being counted in load forecast
 - ISO's current telemetry rules make it difficult to register a DR resource as a PR or NPR
- This situation means that preferred, available capacity across the EIM footprint is unable to be utilized or appropriately valued
 - This contributes to the capacity shortage issues facing the region during peak demand times and extreme events
- EIM Entities and CAISO should work together to ensure DR can be accurately scheduled through EIM (RSE, base scheduling, load forecasts, market dispatches)

Emergency Actions

- Emergency capacity (including emergency demand response) should be included in a BAA's RSE if:
 - it has been deployed/base scheduled for energy; or
 - it has been initialized and available for market dispatch
 - i.e., similar criteria for including any other resource in the BRCT
- The RSE is intended to measure each BAA's ability to meet its obligations
 - Arming firm load for curtailment is an indicator that the BAA is not resource sufficient