2019 Annual Report Recommendations

July 14, 2020

Department of Market Monitoring

Summary of key recommendations

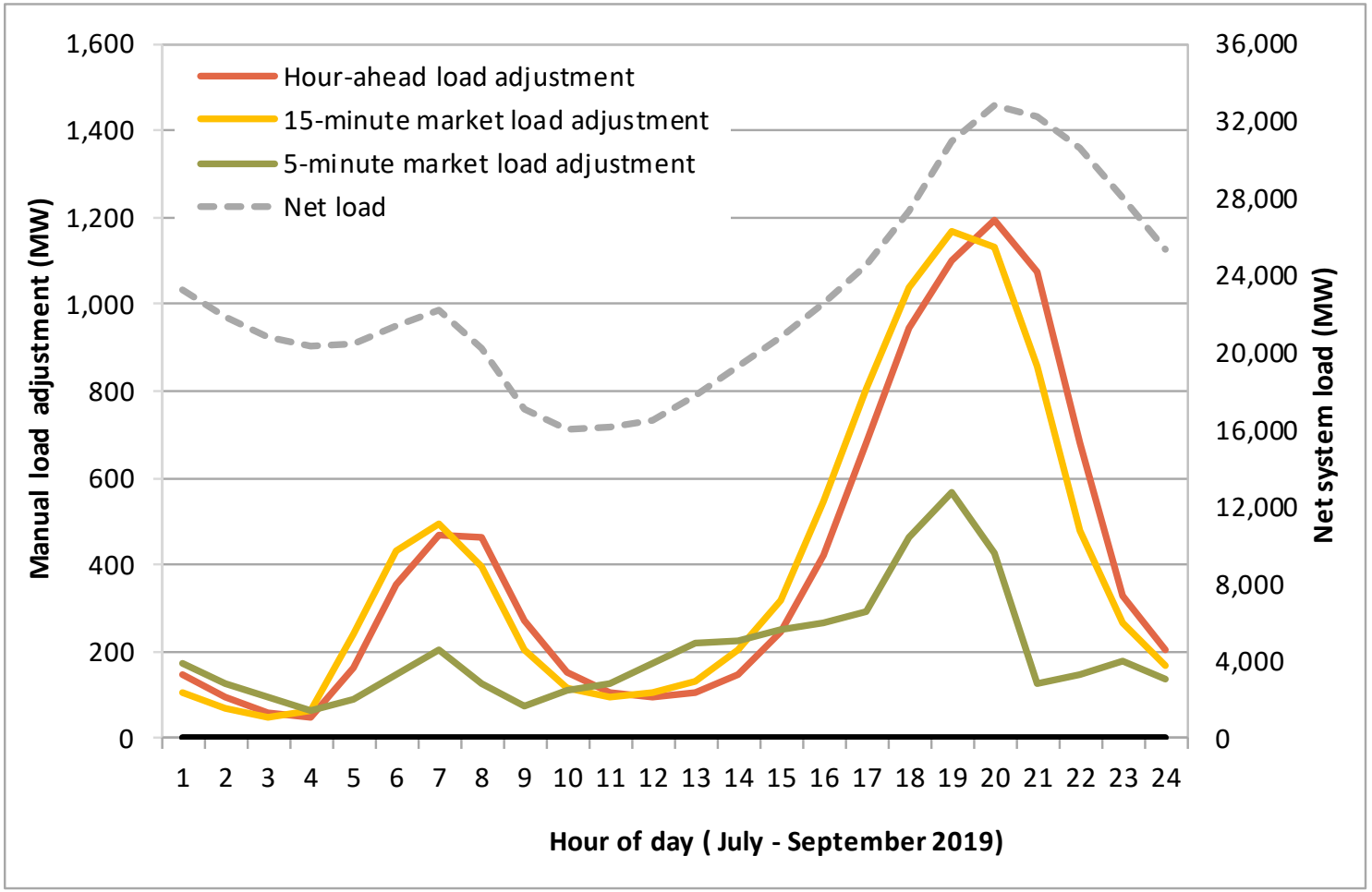
- Enhance flexible ramping product
  - Locational procurement
  - Modify to address uncertainty over longer time horizon (e.g. 1 to 4 hours).
- Day-ahead market enhancements
  - Drop or defer reliability energy product and combined energy/RUC process
  - Focus on new day-ahead imbalance reserve product
- Extended day-ahead market
  - Carefully design rules for imports/transmission used to meet day-ahead resource sufficiency requirements in EIM and CAISO balancing areas
- Congestion revenue rights
  - Consider further changes to auction/allocation
  - Do not extend auction to EIM areas in extended day-ahead market

Enhance real-time flexible ramping product

- Locational procurement
  - Aimed at reducing “stranded flex ramp” in areas that cannot be used due to transmission limits.
  - Analysis shows significant stranded flex ramp in lower cost balancing areas in Northwest.
  - CAISO addressing in current stakeholder initiative.

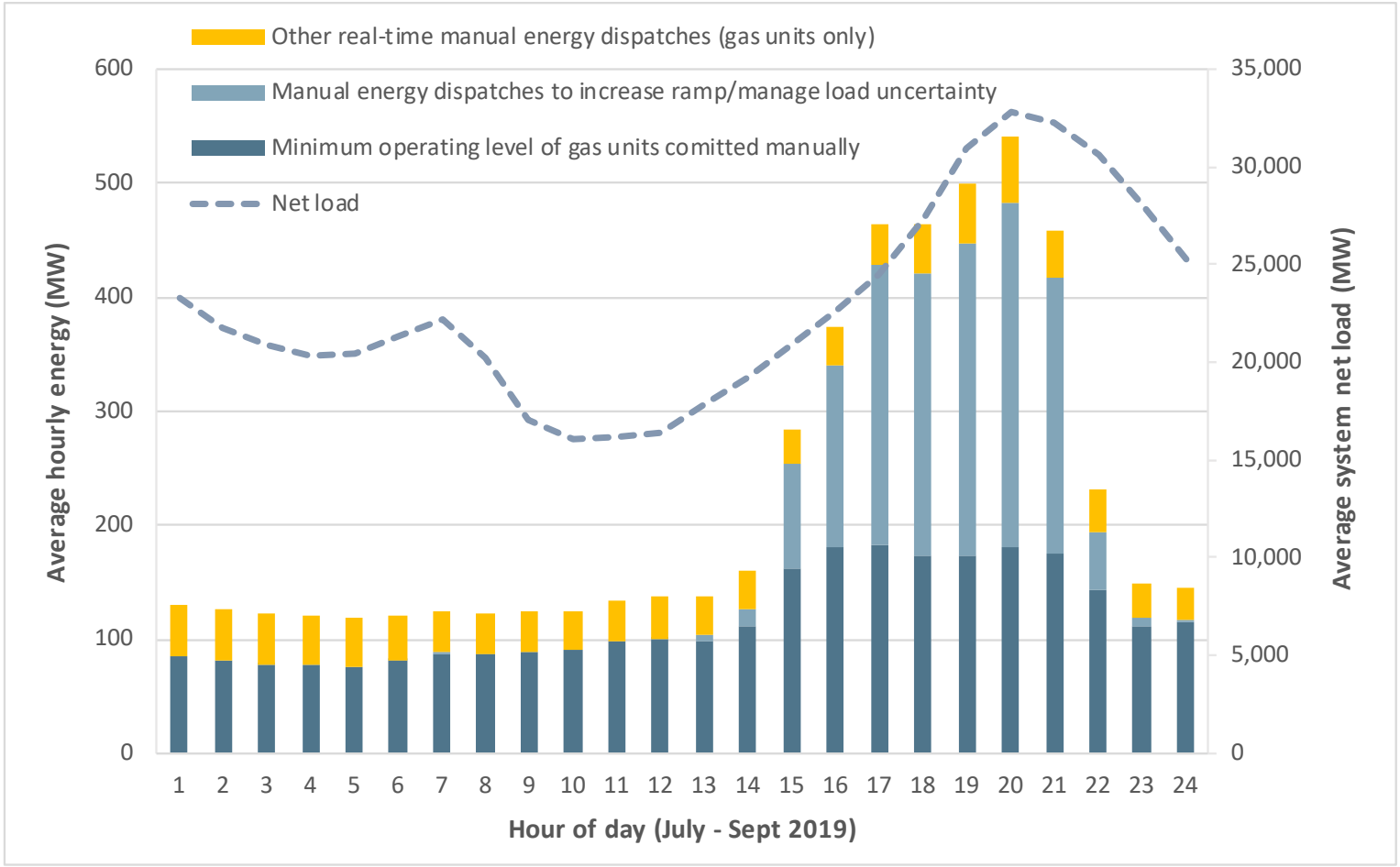
- Incorporate uncertainty about what net load will be 1 to 4 hours out from current real-time market run
  - Next several slides explain this recommendation

To increase upward ramping capacity, CAISO grid operators make significant upward adjustments to the demand for energy used by the real-time market software to dispatch bids.

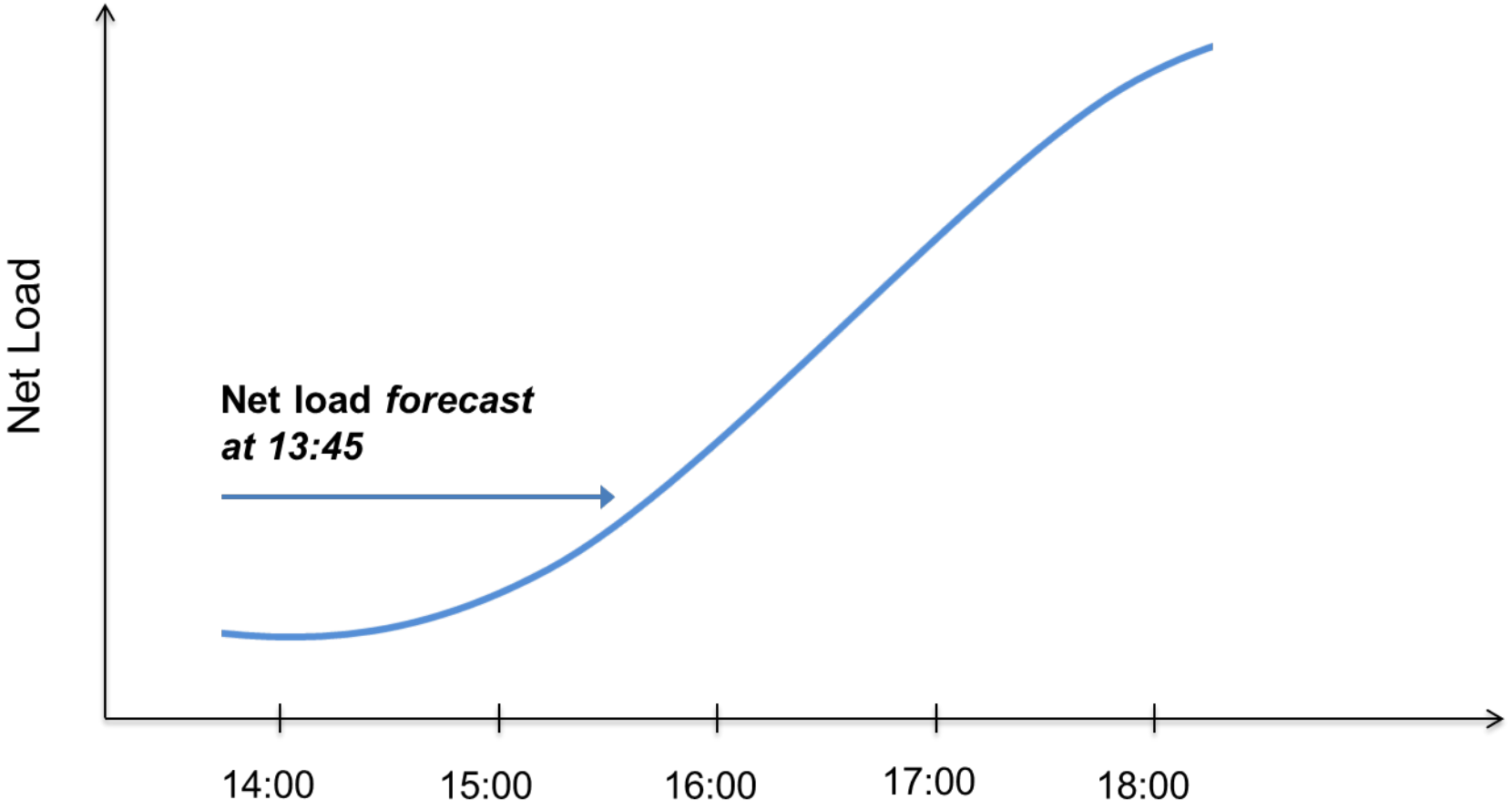


CAISO operators also commit extra gas-fired capacity after day-ahead market and ramp units up in real-time to create more upward ramping capacity.

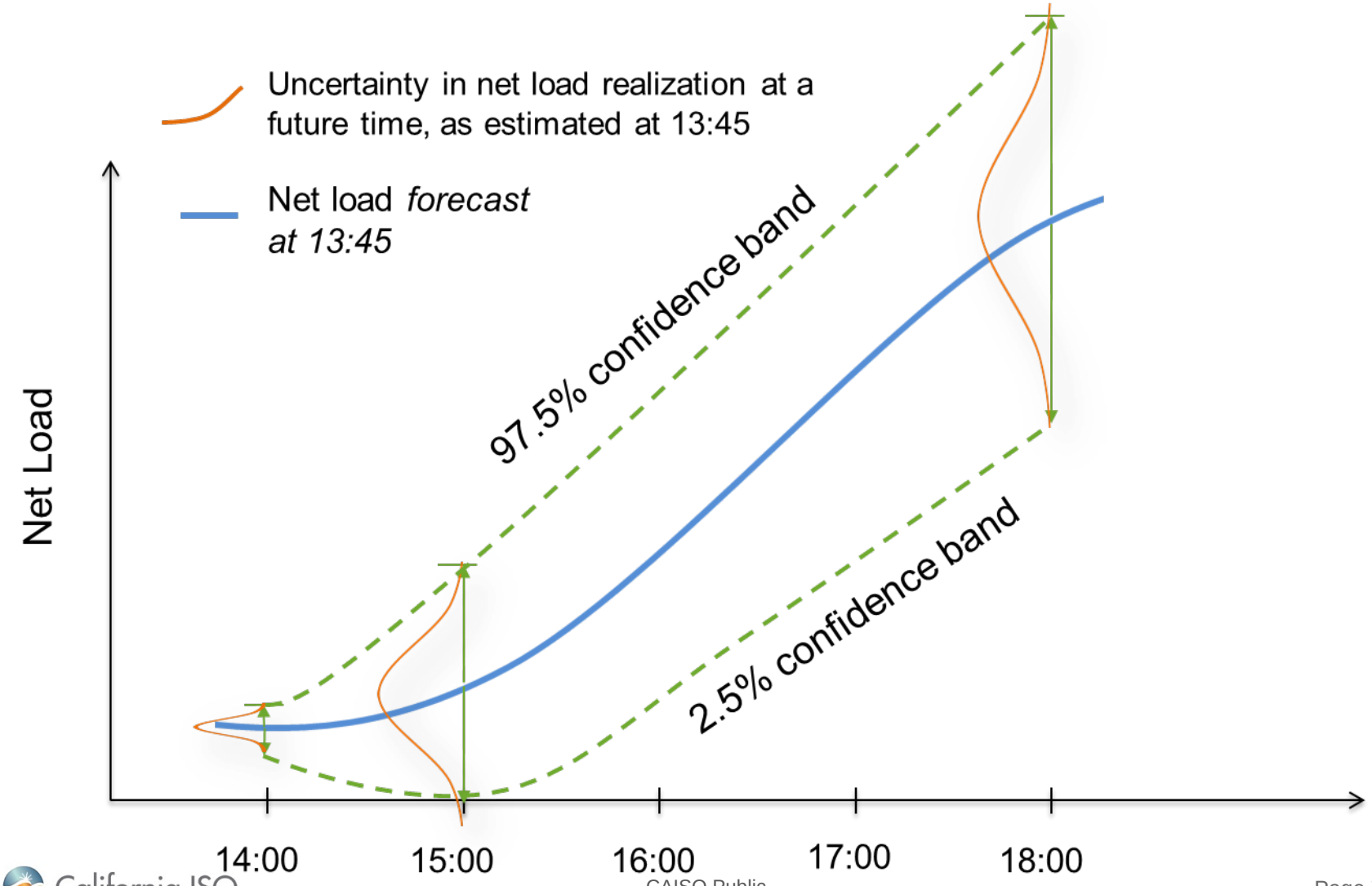
These are referred to as ***out-of-market*** or ***exceptional dispatches***.



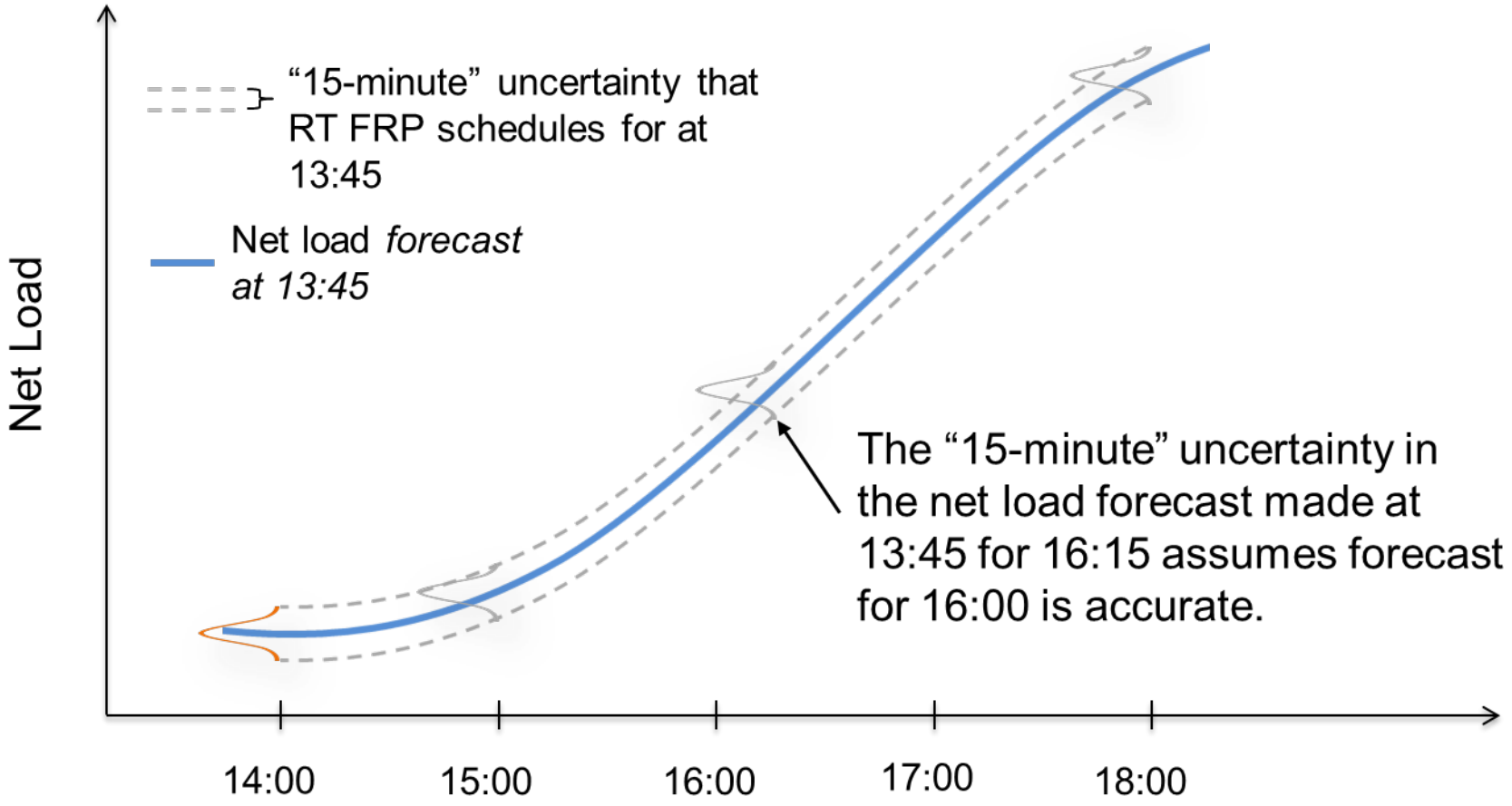
In real-time, the market software uses net load forecast for every interval up to 4.5 hours in future to determine optimal schedules at the current interval (e.g. 13:45 in this example).



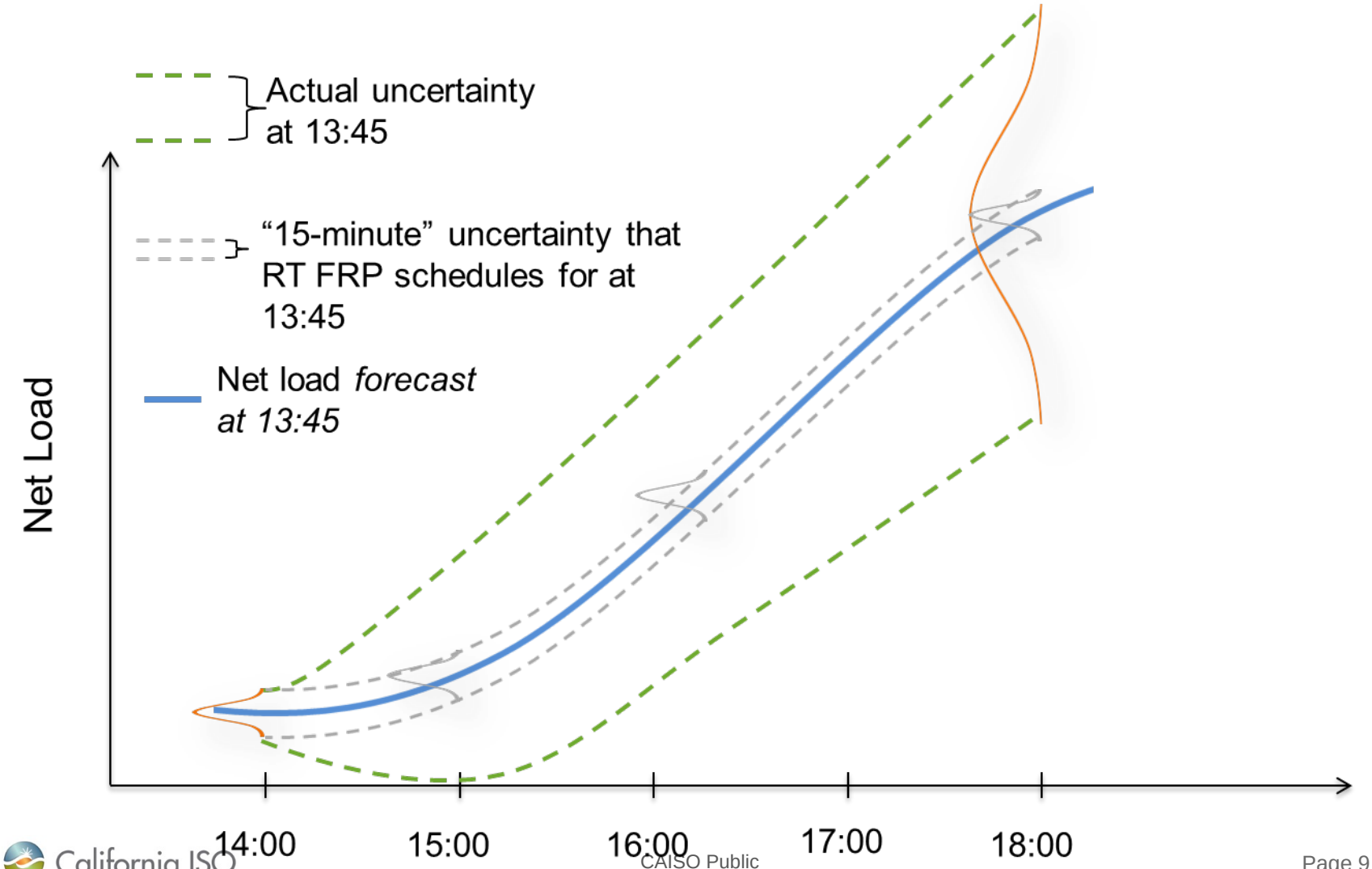
At 13:45 the uncertainty over what net load may actually be at each point in time over the next 4.5 hours grows further out in the future.



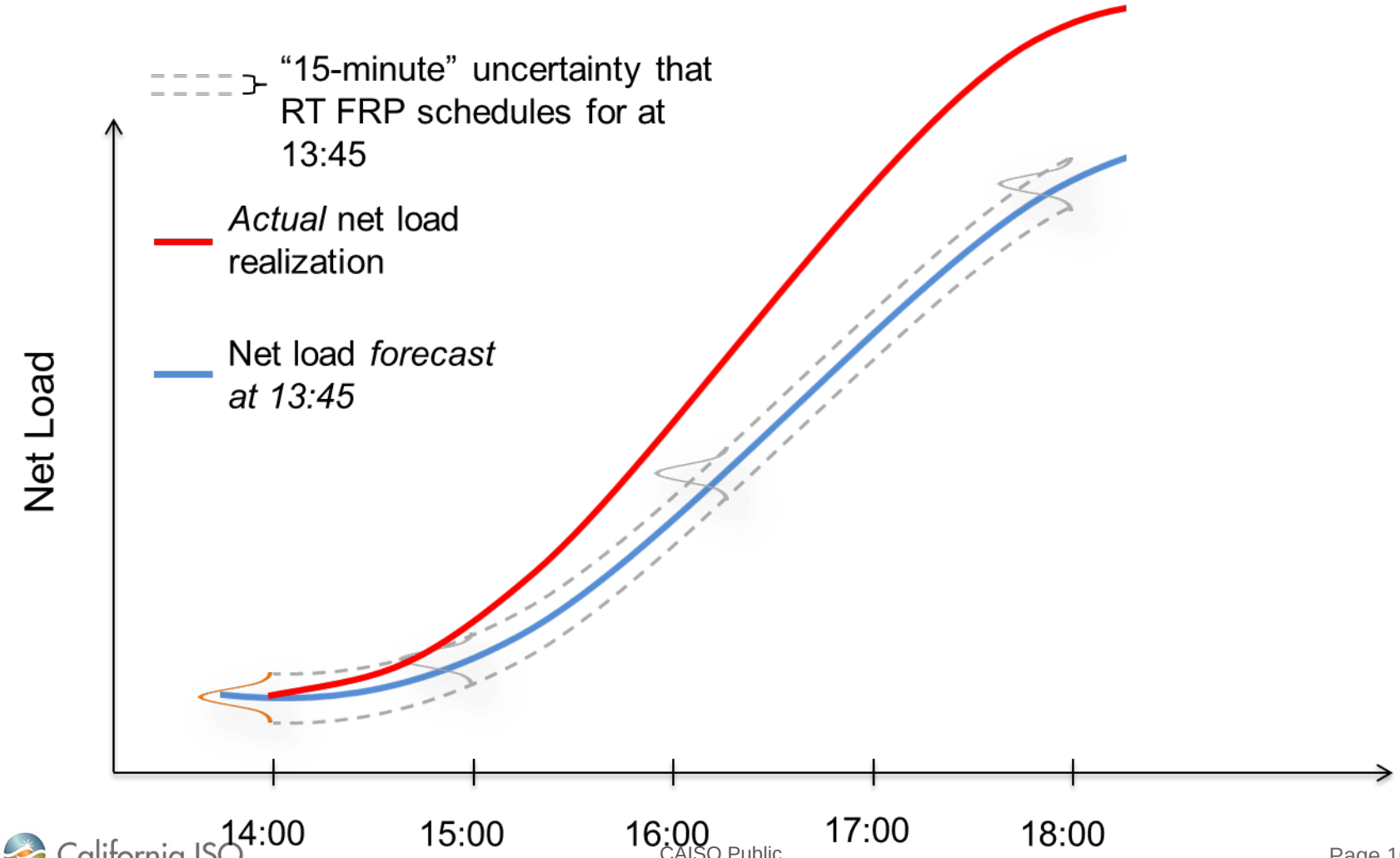
Flexible ramping product has improved real-time software by considering some uncertainty around the net load forecast for every interval 4.5 hours in future used to determine optimal schedules at the current interval.



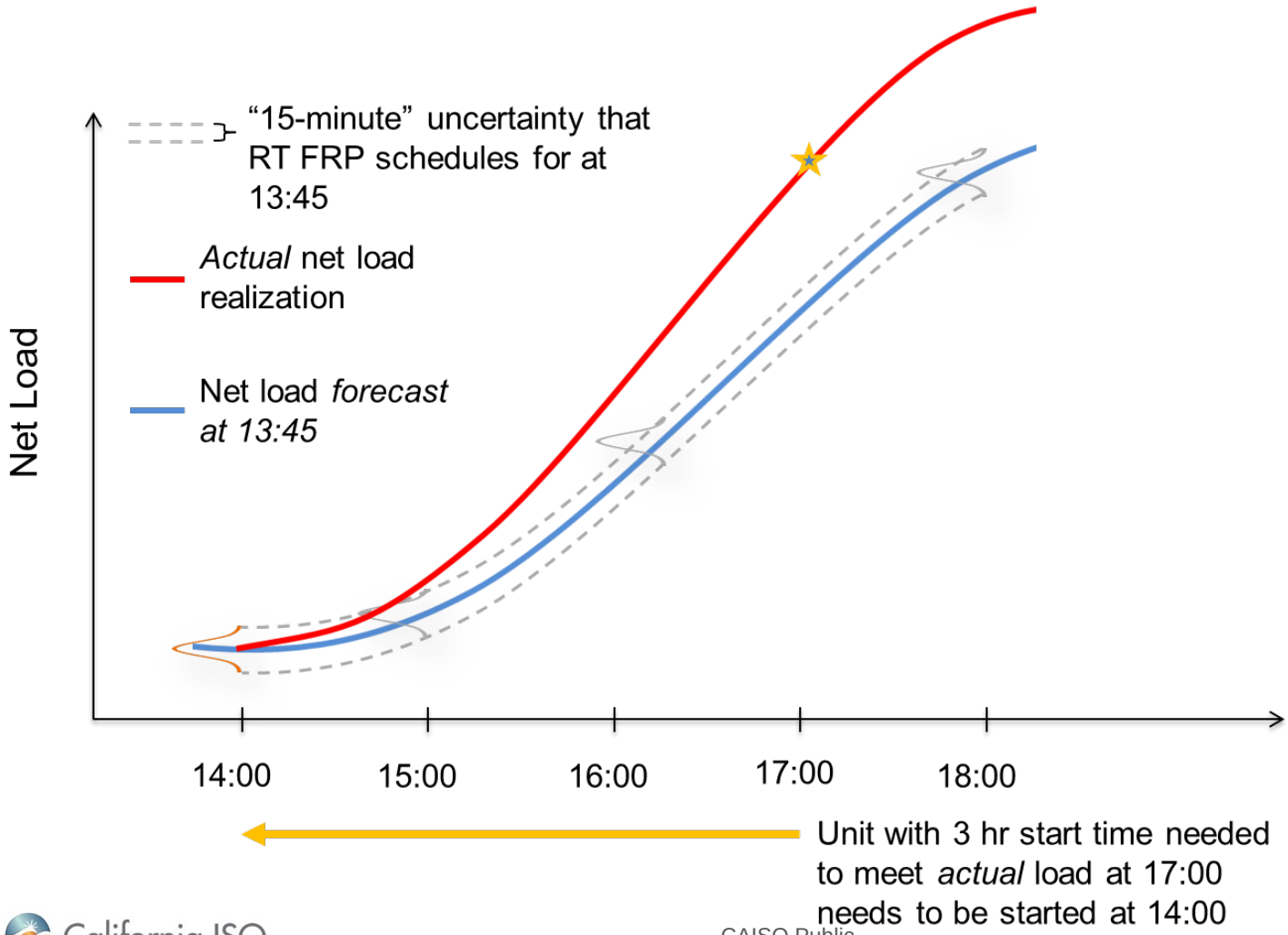
The “15 minute” uncertainty used by FRP is substantially less than actual uncertainty over what net load forecast may be 1 to 4 hours in future



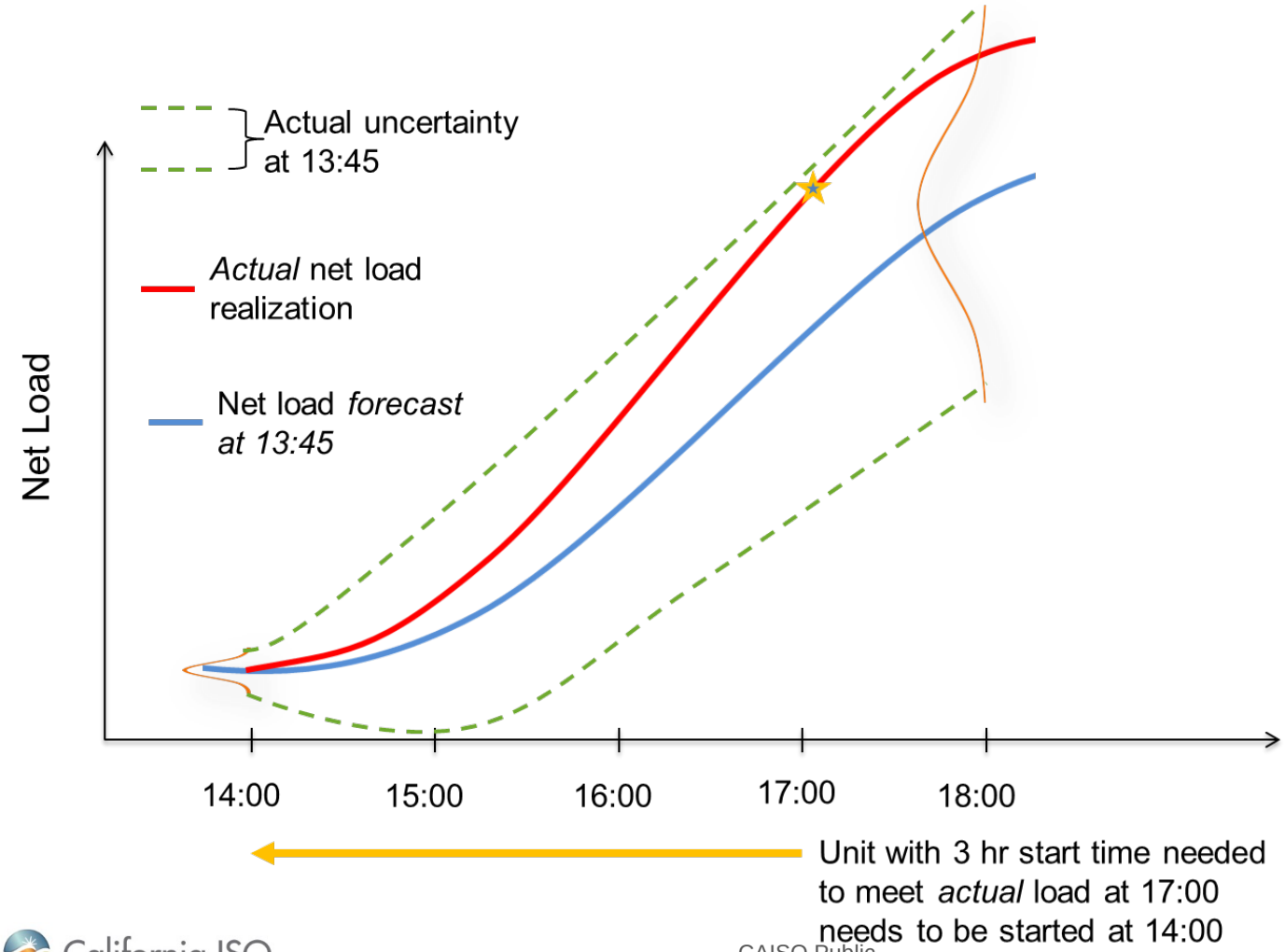
The real-time market software does not optimally position resource fleet to meet potential high net load outcomes 1 to 4 hours in the future.



For example, software will miss opportunity to start units with 3 hour start times that are needed by 17:00 to meet potential high net load outcomes– requires manual operator interventions



Considering actual net load uncertainty 1 to 4 hours in future would allow the real-time software to position resources to meet higher potential net load outcomes.



Day-ahead market enhancements

- Procures “imbalance reserves”—ramping capacity in day-ahead market to address uncertainty in net load between day-ahead and real-time.
- If real-time flexible ramping product is not enhanced to consider uncertainty 1 to 4 hours out, value of day-ahead imbalance reserves will be limited.
- ISO recently adopted DMM’s design recommendation for procuring day-ahead capacity to meet reliability needs without having to add capacity price into energy price.
- A lot of complicated details still to be worked out.

Extended day-ahead market

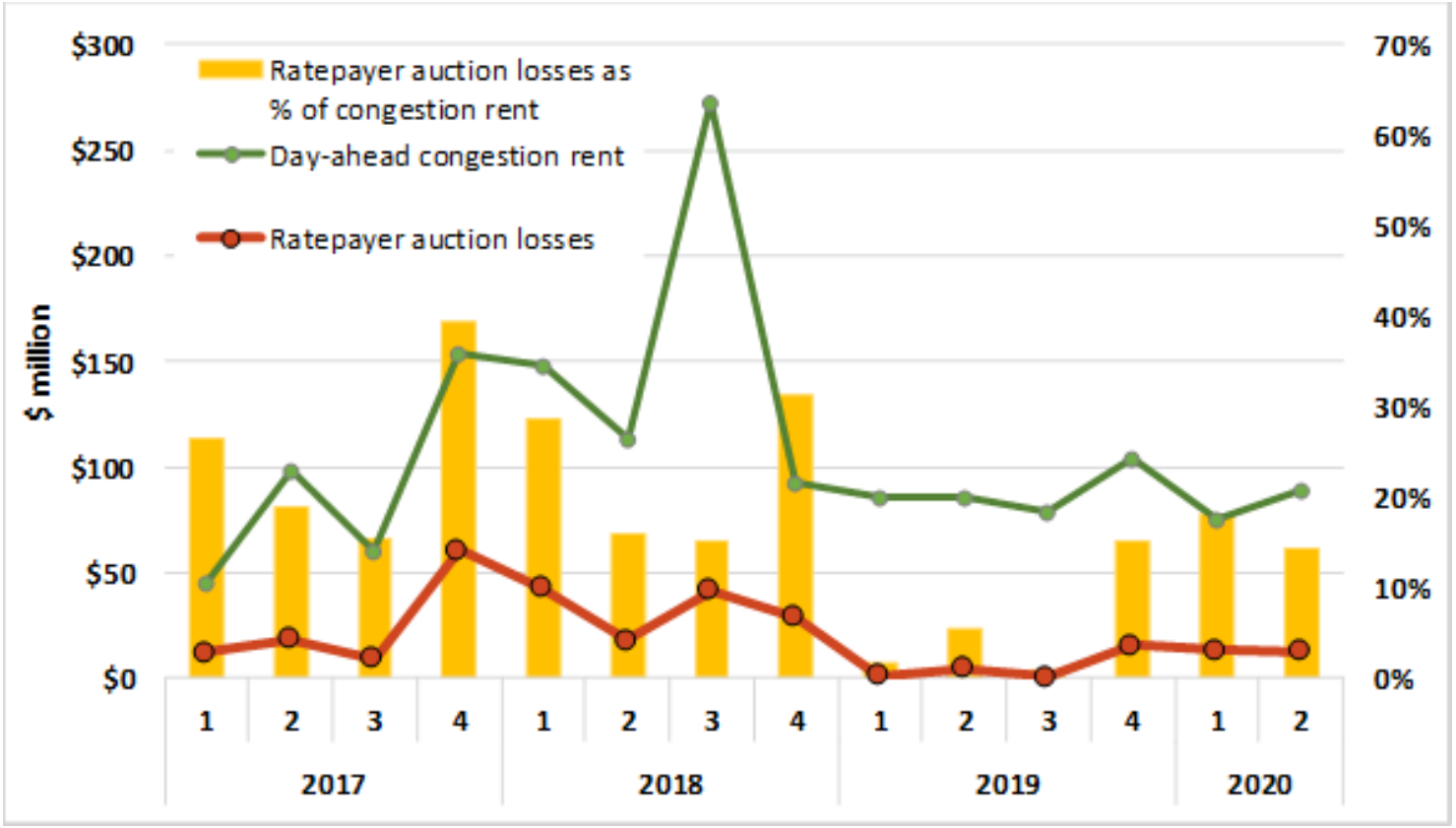
- DMM strongly supports extending day-ahead market across west
- First development phase addresses resource sufficiency, transmission provision, and congestion rents
- Imbalance reserves product is critical aspect of resource sufficiency proposal
  - Enhance real-time flexible ramping product to consider uncertainty 1 to 4 hours out
    - Would allow BAAs to rely in real-time on imbalance reserves from other BAAs
- EIM entities propose day-ahead firm transmission requirement for resource sufficiency qualification
    - Reduce competitiveness of resource sufficiency market?
    - Consider changes to e-tag processes and timelines
- Congestion rent allocation
  - Issues with point to point allocation
  - Do not extend CRR auction to EIM areas

Congestion revenue rights

- Do not extend auction to EIM areas in Extended Day-ahead Market

- Consider further changes to the auction and allocation

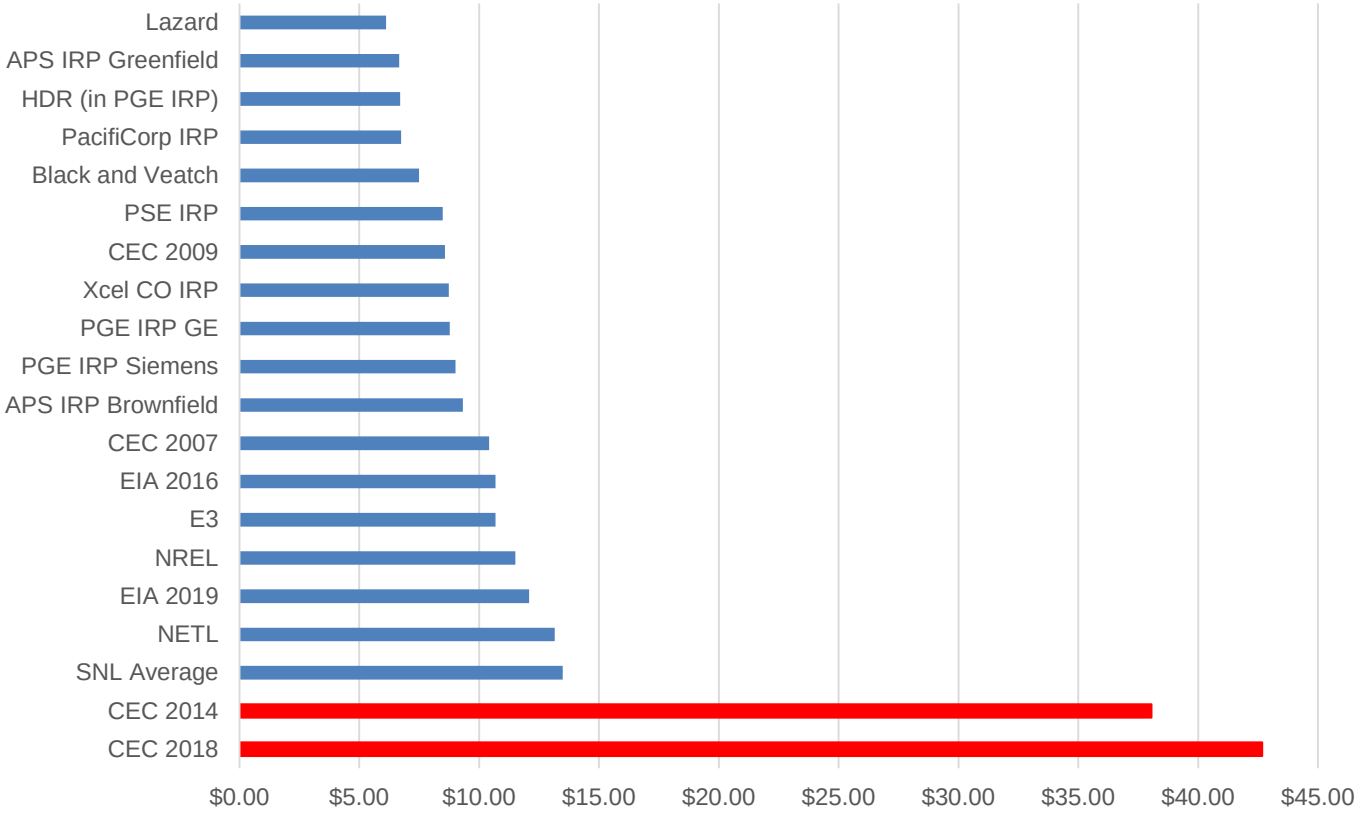
CRR reforms for 2019 were beneficial, but auction problems have not been fully solved



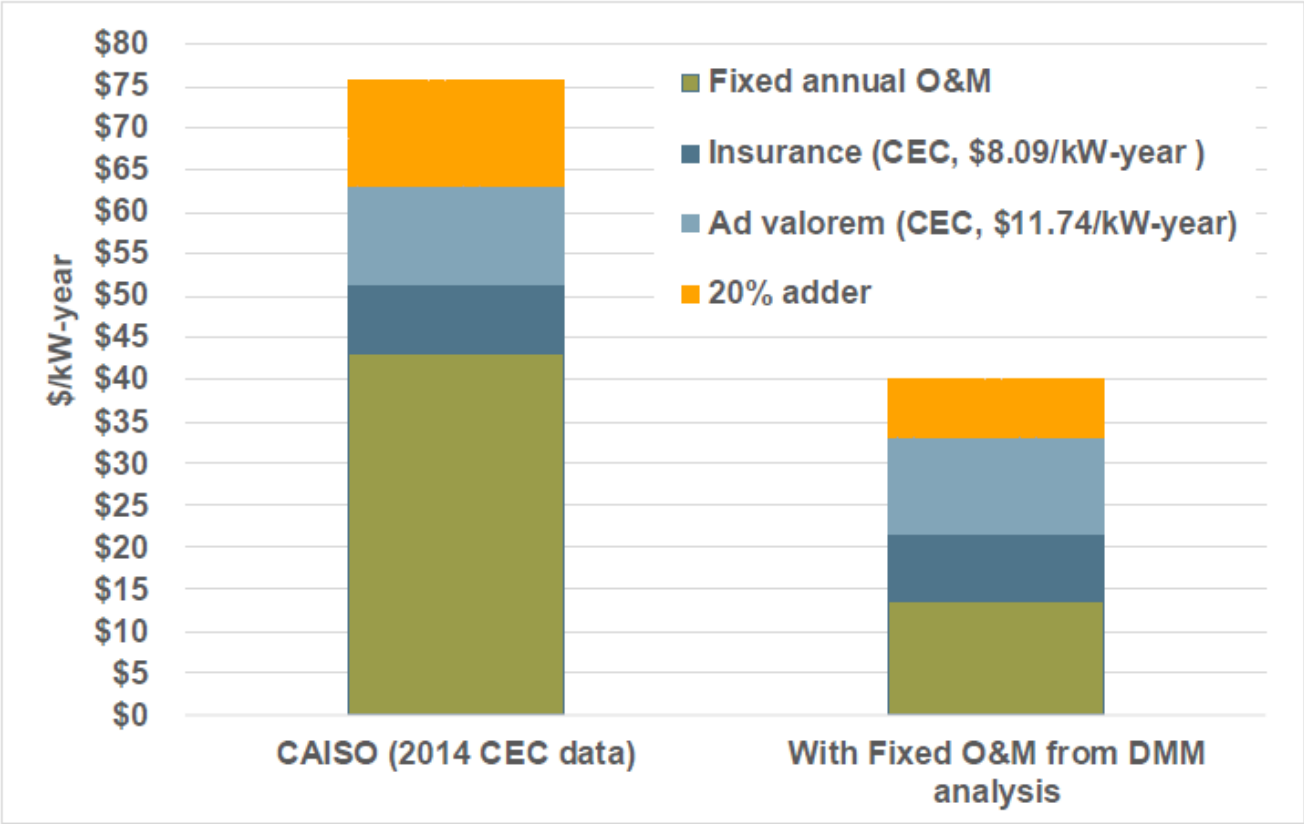
CAISO resource adequacy and capacity procurement recommendations

- Modify and clarify resource adequacy import requirements
  - Ensure availability in day-ahead and real-time markets
- Limit and manage reliance on energy and availability limited resources to meet resource adequacy capacity requirements
  - Demand response, battery resources and capacity ratings for intermittent resources.
- Support development of central buyer by CPUC
- Consider changes to CAISO capacity procurement mechanism (CPM) and reliability must run (RMR) provisions
  - Better alignment of CPM vs RMR backstop procurement mechanism.
  - Market power test
  - Level of soft cap

Estimates of fixed O&M costs of combined cycle resources ($/kW-year)



CPM soft offer cap based on different estimates of fixed annual O&M



Other market design issues

- Continue to develop system market power mitigation options
- Implementing Order 831
  - Import bids over $1,000/MWh
  - Penalty parameters
- Commitment cost and default energy bid enhancements
- Support reshaping of Aliso nomograms
- Energy storage resources
  - Accurately model energy storage's unique operating characteristics and cost drivers
  - Allows efficient dispatch, utilization of resource adequacy capacity, and mitigation of market power
- Mitigate exceptional dispatches of resources with potential to exert market power