



Decision on Deferred MRTU Functionality

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Management is proposing to defer or limit the functionality of four MRTU items.

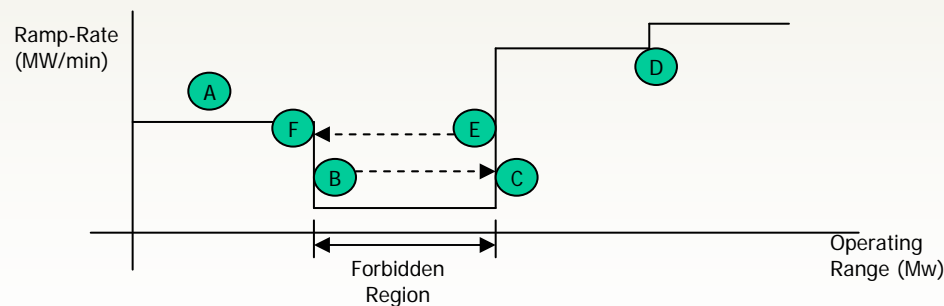
- Forbidden Region in Real-Time
- Ramp-Rate limitation
- Ancillary Service imports not procured in Hour Ahead Scheduling Process (HASP)
- Manual extremely long start resource decision process

Forbidden Region Real-Time Issue

- Forbidden operating region is defined for 61 resources, typically:
 - Transition of operating states for combined cycle resources
 - Transition to allow operating characteristics for thermal resources
- Software functionality ensures resources that are dispatched into Forbidden Region continue to be dispatched through Forbidden Region
- Real-Time Market stability and performance not achieved with Forbidden Region enforced due to complexity of interaction with initial unit conditions, regulation status, ancillary service award, ramp-rates

Recommendation Forbidden Region

- Continue to enforce Forbidden Region in Day-Ahead Market
- Recognize the implied ramp-rate through Forbidden Region
- Accelerate the implementation of multi-state software model
- In interim, utilize similar current operational practice to manage Forbidden Region - combination of exceptional dispatch by CAISO and management of temporary resource rating by resource



Ramp-Rate Issues

- Last 6 months ISO was tuning the systems to achieve software performance and therefore achieving market timelines
- Identified that large ramp-rates changes from one operating range to another can have significant impact to software performance
- Large Ramp-Rate changes exist, and appear to be used by Scheduling Coordinators to model combined cycle

Ramp-Rate Proposed Solution

- Limit ramp-rate changes where ramp-rate change from one operating range to the next operating range to a 10:1 change
- ISO will internally adjust ramp-rate to achieve a 10:1 ratio if submitted ramp-rate does not achieve the ratio
- A normal de-rate can be used to hold a resource at a required capacity until resource is able to ramp at the adjusted ramp rate
- Accelerate the implementation of multi-state software model post *go live*

Ancillary Service Import Issues

- Market systems do not recognize hourly imports from System Resources as dispatchable within the hour
- Consequently, ISO will not be able to access the energy associated with ancillary service from hourly System Resource making the service operationally infeasible
- Hour Ahead Scheduling Process (HASP) cannot be used to procure ancillary service for the hour

Ancillary Service Import Solution

- Day-Ahead Market is the most appropriate market to procure Ancillary Service from imports on an hourly basis
- If an import is certified and can overcome limitations, an import can also offer incremental ancillary service into the Real-Time Market for procurement on 15-minute interval basis
- The e-Tag should be based on the Day-Ahead Market Awards and Real-Time Market Offer or HASP Advisory Award

Extremely Long Start Commitment Process

- Units with Start Up time greater than 18 hours must be committed prior to running the Day-Ahead Market to ensure resource has sufficient notice to start
- System Resources with contracts require commitment instructions by 0600 one day ahead
- Original plan was to run a 48 hour optimization to guide operators commitment decisions
- About a year ago automation of the Extremely Long Start process was deferred to focus effort on other key functionality

Extremely Long Start Commitment Solution

- Scheduling Coordinators must submit a bid for the Extreme Long Start resource 2 days ahead
- ISO Operations will consider and make commitment decision based on:
 - All submitted bids,
 - Start up cost,
 - Minimum load cost
 - 2 day power flow study
 - Good Utility Practice
- Extremely Long Start units will receive start up instructions via phone call from the ISO Operator
- Extremely Long Start resource shall submit the same Bid into the Day Ahead Market for the first day of the commitment so the ISO can enforce commitment in the normal Day-Ahead Market