



California ISO
Your Link to Power

Forbidden Region Reserve Management

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General Principles

- In the DA market, resources will not be scheduled in the IFM within their Forbidden Operating Regions.
- In Real Time, Exceptional Dispatch will be used to ramp units through Forbidden Regions or keep units out of Forbidden Regions, if required for Reliability Purposes.
- If a resource is not needed for reliability purposes the Market Participant can use a “Normal Card” to keep the unit below a Forbidden Region, or a “P-min Card” to keep unit operating above a Forbidden Region.
- The ISO Forbidden Region Operating Procedure is M-408.

Example 1

- A resource is dispatched into a Forbidden Region.
- This resource has DA schedules for the current hour or for the next hour in a higher operating range.
- MP observes the ADS advisory dispatches ramping the resource through the Forbidden Region.
- In this case, the MP does not need to take action as the resource is ramping through the Forbidden Region as expected towards its DA schedules.

Example 2

- A resource is dispatched into a Forbidden Region.
- This resource has DA schedules for the current hour or for the next hour in a lower operating range.
- ADS advisory dispatches indicate the resource will be moved into the lower operating range.
- MP does not need to take action as the resource is ramping through the Forbidden Region as expected towards its DA schedules.

Example 3

- A resource is dispatched by ADS into a Forbidden Region.
- This resource may or may not have DA schedules for the current hour or the next hour in a higher (or lower) operating range.
- The ADS advisory dispatches give no clear indication that the resource will ramp through that Forbidden Region into the higher (or lower) operating range.
- MP needs to make their own market based decision on whether to allow the resource to ramp to the higher (or lower) range.
- Examples of market based decisions to consider:
 - Does resource require it to be in the higher operating region to satisfy a spin or non-spin award?
 - What are the potential lost opportunity costs with each operating range?

Example 3...continued

- MP decision 1:
 - MP decides to ramp resource to higher operating range or hold resource in higher operating range.
 - MP enters a “P-min Card” in SLIC with a P-min value at the lower operating limit of the higher operating range. ADS dispatches (from RTN) will ramp up (or hold) resource into the next operating range. (See P-min example below)
 - Range 1 (lower) = 0 to 100 MW
 - Forbidden Region = 100.1 to 124.9 MW
 - Range 2 (higher) = 125 to 300 MW
 - SLIC P-min value = 125 MW
 - Resource will then receive ADS dispatches between 125 and 300 MW.

Example 3...continued

- MP decision 2:
 - MP decides to ramp resource to lower operating range or hold resource in lower operating range.
 - MP enters a “Normal Card” in SLIC with a “0 MW Curtailment” and an “Availability Point” equal to the upper operating limit for the lower operating range. ADS dispatches will ramp down (or hold) resource to the lower operating range.
 - (See Normal Card example on next slide.)

Example 3...continued

- MP decides to ramp resource to lower operating region or hold resource in lower operating range.

Range 1 (lower) = 0 to 100 MW

Forbidden Region = 100.1 to 124.9 MW

Range 2 (higher) = 125 to 300 MW

SLIC MW Curtail Value = 0 MW

SLIC Normal Card Availability = 100 MW

- Resource will receive ADS dispatches from RTN between 0 and 100 MW.

Example 4

- If the Resource is required for Reliability:
 - Resource required for Reliability in higher operating range. Resource will receive a “min oos” Exceptional Dispatch through ADS.
 - Resource required for Reliability in lower operating range. Resource will receive a “max oos” Exceptional Dispatch through ADS.

Normal Cards

- Normal cards can be for up-to a 24 hour period.
- Normal cards can now be submitted up to 48 hours before the start-time of the Normal card.
- Normal cards can be ended any time by MP.
- Normal cards will be reviewed by CAISO Grid Operators.
 - CAISO Grid Operators can request a MP to end a Normal card when there is a reliability need.
 - CAISO Grid Operators can end a Normal card if there is a reliability need.

Pmin Cards

- P-min cards can be for up-to a 2 week period.
- P-min cards can be ended any time by MP.
- P-min cards will be reviewed by CAISO Grid Operators.
 - CAISO Grid Operators can request a MP to end a P-min card when there is a reliability need.
 - CAISO Grid Operators can end a P-min card if there is a reliability need