Reinstating Forbidden Operating Region Functionality in the Real-Time Market and Maintaining the Limitation on the Operational Ramp Rates

Prior FERC Docket No. ER09-213

January 15, 2010

In preparing for the start of its new market design, on October 31, 2008, the California Independent System Operator Corporation (ISO) requested authorization from the Federal Energy Regulatory Commission (FERC) to defer several non-core MRTU market functionalities.[1] One of the features for which deferral was requested as the Forbidden Operating Region (FOR) functionality in the Real-Time Market. FORs consist of operating ranges through which a resource can transit but within which it cannot be dispatched up or down with stability. The ISO tariff pending at the time of the deferral request provided that the Real-Time Market software would not dispatch a Generating Unit within its FOR in the Real-Time Market, except for the purposes of ramping through the FOR. This software feature was included so that the ISO market optimization software would be sensitive to operating characteristics of generating units that contained FORs. During market simulations, the inclusion of this software feature in the Real-Time Market caused performance and stability issues. The ISO accordingly requested authority to defer implementation of this software functionality, or an alternative feature, in the Real-Time Market until a later time.

A second feature the ISO requested to defer was allowing generating units to submit an unlimited range of Operational Ramp Rates (ORRs) from one operating range to another. Similar to the FOR functionality, allowing unlimited changes between

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[1] Amendment to MRTU Tariff to Defer Availability of Four Non-Core Features of MRTU, FERC Docket No. ER09-213-000 (Oct. 31, 2008).

ORRs created market performance issues during market simulation. As an alternative, the ISO proposed to place a limit on the relative size of allowable changes in ORRs from one operational range to another.

On January 30, 2009, FERC accepted the ISO's request to defer both market features.[2] As noted by the Commission in its order, the ISO explained in its October 31, 2008 filing that the Multi-Stage Generating unit (MSG) modeling approach possibly would alleviate the problems with deploying the FOR functionality, as well as allow unlimited changes to ORRs. At the time of the filing, the ISO expected that the MSG functionally would be ready for implementation approximately six to nine months after MRTU go-live. As part of the MSG stakeholder process, the ISO also planned to reevaluate the need for the limitations on FORs and ORRs.

The stakeholder process on the MSG functionality began on November 7, 2008, with the posting of an initial issue paper. On May 18, 2009, the ISO Governing Board approved deployment of the MSG functionality. The ISO has also been working with its vendor to develop the MSG functionality as designed. Through this stakeholder process, the ISO determined that the MSG functionality would address the performance issues previously observed with the FOR functionality. The ISO also has determined that until it has adopted the MSG functionality, it cannot evaluate whether the restrictions on ORRs are still necessary. Therefore, the ISO will delay this determination until the MSG functionality is implemented. In the interim, the ISO proposes to maintain the current restrictions on ORRs.

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[2] *California Indep. Sys. Operator Corp.*, 126 FERC ¶ 61,081 (2009) (*Deferral Order*)

Through the latter half of 2009, the ISO began experiencing project schedule challenges with MSG modeling. In September and October of 2009, the ISO began briefing its Governing Board on these challenges. The ISO also discussed these challenges with stakeholders and began evaluating whether stakeholders themselves would oppose a potential delay in the start date of the MSG functionality. In December 2009, ISO Management informed the Governing Board and stakeholders that based on all the information it had received and the project schedule challenges to that point, the ISO would not be able to implement MSG on April 1, 2010 as previously anticipated. Based on comments received from stakeholders, the ISO understands that an April 1, 2010 start for MSG also would pose an implementation challenge for stakeholders.

At this time the ISO anticipates that the MSG functionality will be implemented in Fall 2010. As an interim measure, the ISO has decided to pursue implementation of the FOR functionality in the Real-Time Market. With or without a software feature, the ISO is required to move resources with FORs through that region to a stable configuration. Without the software functionality, such movement is accomplished through manual interventions – either an exceptional dispatch by the ISO or an entry into the SLIC interface by the resource. By automating this process, the FOR functionality will minimize the need for such manual interventions and promote better market and system operations.

As discussed in its October 31 deferral filing, the exclusion of the FOR functionality did not prevent the CAISO from Dispatching a unit with a FOR. Rather, the exclusion of the functionality resulted in an inability to ensure that a resource dispatched into a FOR will then continue to be dispatched through that FOR.   The reinstated FOR

functionality will now enable the ISO to ensure that such resources dispatched within their FOR will be continue to be dispatched through the FOR.

The ISO did not change any of its settlements rules as a result of the deferral of the FOR functionality. This is because the settlement implications fall out of the actions the parties take to deal with the FOR, which would be required even with the software feature in place. Consequently, implementing the FOR functionality for the Real-Time Market does not require changes to the ISO's settlements rules.

Implementation of FOR Functionality

As an interim measure due to the delay in implementing MSG, the market software vendor has provided the ISO with a FOR functionality similar in most respects to the existing functionality in the Day-Ahead Market. The one difference between the FOR functionality in the Real-Time Market and in the Day-Ahead Market is that the functionality in the Real-Time Market contains a software algorithm enhancement that has improved the performance of the feature for the Real-Time Market. This enhancement relates to the algorithm logic controlling how a resource enters and transits through a FOR. In particular, depending on the crossing time of a resource, a resource may be dispatched to the border of the FOR before proceeding to cross the FOR boundary. This enhancement is consistent with the intent of FOR, which is to ensure that a resource dispatched across a FOR will not receive an additional dispatch in the opposite direction until it has crossed the FOR.

As was previously provided for in the FOR functionality, FORs will be static and defined in the Master File along with all other resource characteristics. The FOR functionally supports up to four (4) FORs for a given Generating Unit. Not all resources

in the ISO fleet have FORs, and for those that do, they usually have only one or two.

The FOR ranges are static and will be included in the FOR definition in the Master File,

along with their associated "Crossing Times." An implicit ramp rate for the FOR can be

derived by dividing the range of the FOR by its Crossing Time.

Comparison of current functionality in Day-Ahead compared to the new Real-Time functionality

The following table compares the existing FOR feature in the Day-Ahead Market

and the pending FOR feature for the Real-Time Market.

Area	Existing FOR feature for the DAM	New FOR feature for the RTM
Dispatch	Once in a FOR, must dispatch to the other side without stopping or changing direction. Can cross anywhere to get to the FOR.	Same, except might stop at FOR boundaries.
Ancillary Services Procurement	Cannot procure Ancillary Services during intervals where dispatching through FOR, unless total crossing time is 20 minutes or less.	Same. But because for the time horizon for RTUC is 15 minutes, in the RTM, cannot procure AS during intervals where dispatching through the FOR, unless the resource is able to complete its crossing of the FOR prior to the end of a 15-minute dispatch interval.
Number of FORs permitted	Four non-overlapping regions	Regions are same as identified for Day-Ahead
How registered	Through Master File process	Same as what is registered for the Day-Ahead

Filing with the FERC to Reinstitute the FOR functionality in the Real-Time Market

The ISO anticipates being ready to implement the new FOR feature for the Real-Time Market on April 1, 2010. The ISO and market participants are currently preparing for market simulations for this feature that will commence on March 1, 2010. Therefore, the ISO is planning no later than January 28, 2010 to seek authority to reinstitute essentially the same tariff language the ISO previously deferred. The proposed tariff language is attached. The ISO seeks comments regarding the implementation of the FOR on April 1, 2010, as well as the proposed reinsertion of the essentially unchanged tariff language to enable the FOR feature in the Real-Time Market. The ISO will be discussing the reinstatement of the FOR functionality in the Real-Time Market on January 20, 2010. Comments should be submitted to caisotariff@caiso.com, no later than January 26, 2010.