



California ISO
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California Independent
System Operator Corporation

Mitigation of Potential Market Power
Under MRTU Exceptional Dispatch Provisions

Department of Market Monitoring

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I. Summary

This paper provides a discussion of the potential for market power under the Exceptional Dispatch provisions of the CAISO's current MRTU market design. Exceptional Dispatches are similar to current out-of-sequence (OOS) and out-of-market (OOM) actions that may be taken by CAISO operators to address a system or local reliability issue that cannot be resolved through the CAISO market software. Units receiving Exceptional Dispatches under MRTU for energy in excess of minimum operating levels will be paid the higher of their Bid price or the Locational Marginal Price (LMP) for this energy. In such cases, units receiving Exceptional Dispatches for energy needed to meet reliability constraints that cannot be resolved through the CAISO market software may be able to exercise market power by bidding up to the \$500 bid cap initially in effect under MRTU.

The CAISO expects that the frequency and duration of Exceptional Dispatches for reliability constraints that cannot be resolved through the CAISO market software will be very limited under MRTU. However, even if such Exceptional Dispatches are relatively infrequent, the potential cost of such Exceptional Dispatches could be significant if generators receiving such dispatches are able to exercise local or temporary market power by submitting extremely high Energy Bids.¹ Consequently, the Department of Market Monitoring (DMM) believes that it would be prudent to consider implementation of a tariff provision to limit the potential for the exercise of excessive market power in the event Exceptional Dispatches for energy are needed to meet reliability constraints that cannot be resolved through the MRTU market software. This paper proposes an approach that could be considered for mitigating market power under such a scenario. DMM is issuing this paper at this time in order to initiate consideration and discussion of this mitigation approach by stakeholders, so that the CAISO may be prepared to file any tariff revisions deemed appropriate prior to MRTU implementation.

II. Background

In response to concerns and questions raised by stakeholders in discussions of the CAISO proposed Interim Capacity Procurement Mechanism (ICPM), the CAISO's Market and Product Development (MPD) group issued a discussion paper on October 22, 2007 describing details of current Exceptional Dispatch provisions under MRTU.²

As described in MPD's October 22 discussion paper, Exceptional Dispatches are similar to current out-of-sequence and out-of-market actions that may be taken by CAISO operators to address a system or local reliability issue that cannot be resolved through the

¹ For example, a single 50 MW dispatch over 8 hours at the price of \$500/MW would equal \$200,000.

² See *Exceptional Dispatch and Proposed Interim Capacity Procurement Mechanism*, October 22, 2007, <http://www.caiso.com/1c7f/1c7fe9985c80.pdf>

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CAISO market software.³ In such cases, the CAISO has authority to manually dispatch specific generation units to address reliability issues.

Under current MRTU settlement rules and software, if a unit is started up or required to continue to operate through an Exceptional Dispatch, it will be guaranteed to be paid its Start-up and Minimum Load Bids through the Bid Cost Recovery process. If a unit receives an Exceptional Dispatch for any additional incremental energy (above minimum load), this will be settled outside of the market clearing function (i.e., will not set or affect LMPs). Any such Exceptional Dispatches for incremental energy will be paid the higher of:

- (a) the unit's Energy Bid price;⁴
- (b) the unit's Default Energy Bid (DEB);⁵ or
- (c) the LMP at their location.

Thus, Exceptional Dispatches for energy above minimum load will not be subject to any market power mitigation beyond the bid cap under MRTU (initially set at \$500/MWh).

The CAISO has indicated that it expects the frequency and duration of Exceptional Dispatches will be extremely limited. As noted in MPD's October 22 discussion paper, there are two major potential reasons why Exceptional Dispatches may be needed for local reliability issues.

- ***Forced Transmission or Generation Outages.*** Exceptional Dispatches may be triggered as a result of a forced transmission or generation outage. Under this scenario, "the expectation is that within a short period, the CAISO will update the Full Network Model (FNM) to reflect the new situation, allowing for a return to reliance on market mechanisms to establish schedules." (MPD discussion paper, p.2).⁶ Specifically, the CAISO has indicated that forced transmission and generation outages or de-rates should be incorporated into the FNM within one hour to one day of occurrence. Presumably, if the FNM is updated within this time period, there

³ In addition, DMM notes that Exceptional Dispatches – like current OOS dispatches – are for dealing with issues that cannot be resolved through the CAISO market software or dispatches to Reliability Must Run (RMR) units.

⁴ In the event the unit's Energy Bid curve is mitigated under the automated LMPM provisions incorporated in the MRTU software and the unit then receives an Exceptional Dispatch to provide additional energy, the unit's Energy Bid curve would already be mitigated, and the payment received by the unit for this Exceptional Dispatch would be the higher of its (mitigated) Energy Bid or the nodal LMP.

⁵ This would occur only if a unit owner did not submit a market bid for the full available output of the unit. If such a unit is an RA unit (i.e., subject to Must Offer), the CAISO will insert an Energy Bid equal to the unit's DEB.

⁶ According to the CAISO, the FNM will be updated to incorporate new equipment and configuration on a cycle of about 4 to 6 weeks. Planned outages will be incorporated in the FNM from about 2 to 45 days prior to each Trade Date. Finally, forced outages or de-rates of transmission equipment and resources should be incorporated into the FNM within 1 hour to 1 day of occurrence.

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would be limited potential for the exercise of locational market power under this scenario.⁷

- **Local Reliability Constraints Not Modeled in Market Software.** In certain instances, it may also be possible that the FNM incorporated in the CAISO's IFM and HASP/RTM software may not adequately model all local reliability constraints, leading to the need for Exceptional Dispatches to ensure local reliability.

For example, two specific examples of reliability constraints that are not modeled in the FNM include the following:

- **Voltage Stability Constraints.** Voltage support requirements can typically be met by dispatching a unit to operate at its Minimum Load level, so this type of constraint would not appear to require the use of Exceptional Dispatch for energy (above Minimum Load) at bid prices that could significantly exceed competitive levels due to locational market power.⁸
- **SP26 30-minute Dispatchable Energy Requirements.** Under current operating practices, units committed to ensure that sufficient 30-minute dispatchable capacity is online in SP26 are frequently dispatched in real time beyond their minimum operating levels (P-Min) up to their minimum dispatchable operating levels. Under current MRTU provisions for Exceptional Dispatch, a unit expecting to be dispatched up to its minimum dispatchable level could submit extremely high energy bid prices to the real time market.

In many or most cases, the CAISO expects that these reliability requirements are expected to be indirectly met as a result of other constraints incorporated in the FNM and market schedules resulting from the IFM. In addition, although voltage support and stability constraints are not modeled explicitly, these may in some cases be converted and modeled as flow based constraints. Similarly, some contingency constraints may also be converted and modeled as flow based constraints.⁹

⁷ For example, in practice, initial bids submitted by generators at the time they first receive an Exceptional Dispatch due to a forced transmission or generation outage may be limited due to more competitive conditions that may exist prior to these outages. After receiving an Exceptional Dispatch, the generator may exercise local market power by significantly raising their bid price for subsequent hours (e.g., at or near the \$500 price cap). Thus, as long as the FNM is updated within a few hours, the potential for local market power may be very limited under this scenario.

⁸ The CAISO is filing to limit start-up and minimum load bids that may be submitted under the 6-month bid-based option in order to mitigate the potential for locational market power through extremely high start-up and minimum load bids. In addition, the MRTU software and procedures allow the CAISO to manually dispatch resources under Reliability Must Run (RMR) contracts to meet voltage support and other local reliability requirements through the MRTU market software at cost-based rates. However, the amount of capacity under RMR contracts has decreased significantly in 2007, and may decrease further in 2008. In 2007, San Diego was the only major load pocket with significant capacity under RMR contracts that may be used to meet voltage support and other local reliability requirements.

⁹ The FNM software does support enforcing contingency constraints to ensure the emergency rating is not violated for the contingency as long as the contingency does not isolate generation or load. Due to this

The CAISO is currently developing specific operating procedures for the use of Exceptional Dispatches and believes it will be necessary to provide operators with flexibility in terms of when units are committed through Exceptional Dispatches. However, with the exception of long start units that must be committed prior to the IFM, the CAISO expects that most unit commitment through Exceptional Dispatch may occur after the RUC process is completed. This approach will maximize the degree to which any reliability requirements not directly incorporated in the FNM will be met as a result of other constraints incorporated in the FNM and market schedules resulting from the IFM/RUC processes.

Although the CAISO expects the use of Exceptional Dispatch for such reliability constraints to be extremely limited, DMM believes that due to the uncertainty about the potential need to rely on Exceptional Dispatches – particularly for any localized constraints not modeled in the FNM – it would be prudent for the CAISO to consider implementation of a tariff provision to limit the potential for the exercise of excessive market power in such circumstances.

III. Proposed Mitigation Approach

This section describes an option for applying Local Market Power Mitigation (LMPM) to any Exceptional Dispatches made for non-system level reliability requirements. The approach is designed to be consistent with the automated LMPM provisions that are incorporated in the MRTU software to mitigate bids for units which are dispatched through the MRTU software. As with current MRTU market power mitigation rules, this mitigation rule would not be applied for any Exceptional Dispatches made for general system energy.¹⁰

Under this approach, units receiving manual Exceptional Dispatches for energy for any non-system level reliability requirements that cannot be addressed through the RTM software, which were not already subject to LMPM in the pre-RTM process, would be paid the higher of:

- The unit's Default Energy Bid (DEB) or
- The LMP at their location.

As with the current LMPM provisions of MRTU, any resource not under a Resource Adequacy (RA) or RMR contract would be eligible for a bid adder if the unit met the criteria for a Frequently Mitigated Unit (FMU). Under this proposal, any Exceptional

restriction and the way operating procedures are developed today, there is an initial desire by the CAISO to protect against a contingency by enforcing pre-contingency transmission limits, rather than executing the contingencies directly within the FNM. The CAISO expects this will likely evolve over time, with more contingencies directly incorporated in the FNM.

¹⁰ In practice, Exceptional Dispatches made for general system energy should be extremely rare and/or LMPs should be relatively high when such dispatches may be made. However, this mitigation rule would also be applied to any Exceptional Dispatches for energy made for the miscellaneous reasons noted in Section 34.9.2 of the MRTU tariff (such as to perform Ancillary Services testing, etc.).

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Dispatches for local reliability would be included as a “mitigated” dispatch for purposes of calculating the unit’s FMU status.

The main difference with this mitigation rule and the automated LMPM provisions of the CAISO tariff is that under this approach, in the event a unit's DEB was higher than the LMP for its location, the unit’s DEB would not set the LMP for that location (or affect any other LMPs). However, as noted in the FERC September 21, 2006 Order on MRTU:

LMPs should reflect the marginal cost of energy, in order to send accurate price signals. However, manual Exceptional Dispatch instructions differ from those derived from the real-time market optimization software. Units manually dispatched in Exceptional Dispatches need not represent the marginal units, and thus, we agree with the CAISO that it would not be appropriate for such units to set the market price.” (Order at 266)

In addition, DMM notes that in practice, since Exceptional Dispatches may be made only after the market outcomes are finalized based on the Grid Operators’ review of market results, it may not be feasible to allow Exceptional Dispatches to set or affect market prices.

IV. Implementation Issues

The proposed mitigation rule for Exceptional Dispatches for local reliability would require certain modifications in the MRTU system or processes. Additional assessment of implementation issues by various other areas of the CAISO is needed as part of the CAISO’s overall assessment of this issue.

Clearly, any implementation details would be designed to minimize operational and settlement modifications needed prior to MRTU. However, it is important to note that since Exceptional Dispatches must already be issued manually and do not impact LMPs, it may be possible (and necessary) for the process and any software changes necessary to apply this mitigation rule in the settlement process to be completed after MRTU goes live. With this approach, it would still be necessary to develop a process and tool for Grid Operators to identify Exceptional Dispatches to which this mitigation rule would be applied as Exceptional Dispatches are issued.

In order to implement this approach, Grid Operators would need to clearly identify and distinguish Exceptional Dispatches for non-system level reliability from Exceptional Dispatches made for more general system level energy requirements. However, under the current MRTU tariff, the CAISO is required to “record the circumstances that have led to the Exceptional Dispatch” (34.9). The CAISO is currently developing operating procedures to govern how Exceptional Dispatches will be determined and categorized in more detail.

Based on initial review by CAISO staff, several potential options for tracking Exceptional Dispatches that would be subject to this mitigation rule include the following:

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- **Modify Codes for Exceptional Dispatches on Operator Screen.** The MRTU software is currently configured to include a pick list of codes for categorizing Exceptional Dispatches. Thus, one option may be to develop additional codes to distinguish Exceptional Dispatches made for local transmission modeling limitations that would be covered by the proposed mitigation rule. Initial review of this option suggests that while modifying the list of codes may be relatively simple, the “downstream” implications of modifying the codes may be significant, since the codes are used in the automated settlement process.
- **Utilize Existing Text Field on Operator Screen.** In addition to having a pick list of standard codes for different reasons for Exceptional Dispatches, the operator screen in the MRTU software does provide the ability for the Operator to enter a free-form reason for the Exceptional Dispatch. This feature may be used to identify the specific reason for the Exceptional Dispatch, which may in turn be used to determine if it is subject to mitigation. This option may be feasible as long as procedures were in place to ensure that sufficient information was recorded by the Operator to allow more detailed review and categorization of the specific reasons for Exceptional Dispatches.

In addition, modifications to the current MRTU settlement process would be necessary. However, as noted above, since Exceptional Dispatches are issued manually and do not impact LMPs, it may be possible (and necessary) for the process and any software changes necessary to apply this mitigation rule in the settlement process to be completed after MRTU goes live.

V. Next Steps

DMM is seeking stakeholder comment on the mitigation rule for Exceptional Dispatches for local reliability described in this paper. DMM requests that written comments be provided by December 12, 2007. Written comments and questions may be submitted to marketmonitoring@caiso.com.

After considering these initial comments and potential further input from other CAISO business units on the implementation issues associated with this proposal, the DMM will issue a revised proposal. DMM plans to seek CAISO Board approval of a final recommendation in January 2008.