

# **Opinion on Mitigation Measures for Exceptional Dispatch in Real-Time**

by

**James Bushnell, Member  
Scott M. Harvey, Member  
Benjamin F. Hobbs, Chair  
Shmuel S. Oren, Member**

**Members of the Market Surveillance Committee of the California ISO**

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## **1. Introduction**

The Market Surveillance Committee (MSC) of the California Independent System Operator has been asked to provide an opinion on the ISO's proposals for mitigation measures to be applied to exceptional dispatch (ExD) in real-time.<sup>1</sup> Mitigation of ExD has been the subject of several MSC meetings over the past few years, and an earlier version of the latest proposal were discussed at the Oct. 19, 2012 MSC meeting in Folsom. In addition, MSC members have participated in stakeholder calls and have reviewed stakeholder comments submitted to the ISO. The MSC has also issued an opinion on general principles for exceptional dispatch mitigation on May 7, 2008.<sup>2</sup>

In summary, we support the ExD proposal as a bare minimum mitigation measure made necessary by changes to the process of designating transmission constraints as competitive or uncompetitive. So-called "static" analyses of a constraint's competitiveness will no longer be performed as part of the local market-power mitigation process, and therefore cannot be used to determine whether the offers of a resource that is exceptionally dispatched should be subjected to mitigation. We also support the proposed mitigation rules that apply when the dynamic competitive path analysis fails to run.

We are concerned with the continuing high levels of exceptional dispatch, and particularly the relative lack of information concerning their causes and effects. We are concerned that exceptional dispatch may unnecessarily raise costs to consumers because of nontransparent and possibly inefficient dispatch that do not appropriately consider alternative ways to meet non-modeled constraints. We are also concerned that generators who are exceptionally dispatched for competitive constraints (and therefore are not mitigated) may be consistently selected in a manner

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<sup>1</sup>California ISO, *Mitigation for Exceptional Dispatch in LMPM Enhancements Phase 2, Revised Draft Final Proposal*, Oct. 30, 2012, [www.caiso.com/Documents/RevisedDraftFinalProposal-ExceptionalDispatchMitigationRealTime.pdf](http://www.caiso.com/Documents/RevisedDraftFinalProposal-ExceptionalDispatchMitigationRealTime.pdf)

<sup>2</sup>F. Wolak, J. Bushnell, and B.F. Hobbs, *Opinion on Exceptional Dispatch: Options for Market Power Mitigation and Supplemental Pricing under MRTU*, Market Surveillance Committee of the California ISO, May 7, 2008, [www.caiso.com/1fc7/1fc7d6221ea52.pdf](http://www.caiso.com/1fc7/1fc7d6221ea52.pdf)

that enables them to raise their bids, thereby potentially increasing the amount of bid cost recovery they would be eligible for, even though other resources could also be used to resolve the constraint. Whether this occurs under the new system requires careful monitoring.

Finally, we recommend that in cases in which a real-time exceptional dispatch call applies to multiple periods, generating units should not be allowed to change its bid from its level before the first exceptional dispatch call.

The opinion is organized as follows. In the next section, we briefly summarize our previous opinion on ExD and the present CAISO proposal. In Section 3, we offer some general comments on the proposal and on the economic effects of ExD, including effects on prices. Then in Section 4, we express three concerns about the ability of the proposed mechanism to identify and mitigate market power that generators could exercise in response to ExD. These include the backwards nature of the test, which might not reflect current market conditions; the possibility that the process by which generators are selected for ExD could bestow market power even if there are many units that could relieve the constraint of concern; and the ability of generators that are subject to ExD to raise their offers for subsequent intervals. Thus, if the proposal increases the frequency with which exception dispatches are declared competitive and are not mitigated, there is a chance that the exercise of market power will increase; therefore, it is necessary to continue to vigilantly monitor the bidding behavior of generators subjected to ExD. This also motivates the above recommendation (discussed in detail in Section 5) that units that are subjected to ExD be prohibited from raising its bid in subsequent intervals. We conclude the opinion with a discussion of the need for more data and understanding of the process by which ExD decisions are made, and their effects on bidding behavior and prices (Section 6).

## **2. Background on Exceptional Dispatch Mitigation and the ISO Proposal**

The issues surrounding the mitigation of bids when units are subject to exceptional dispatch (ExD) have been discussed by the MSC several times over the past decade. In its May 7, 2008 Opinion,<sup>3</sup> the MSC outlined several principles that it believed should be followed when devising and implementing an offer mitigation mechanism for units subject to Exceptional Dispatch, and strongly supported capturing system constraints to the extent feasible rather than resorting to out-of-merit dispatch of units.

The October 30, 2012 ExD mitigation proposal by the CAISO is motivated by forthcoming changes in local market power mitigation (LMPM). In particular, upon implementing Phase 2 of the LMPM revisions, the current static path designations assessment, which presently determines the triggers for ExD mitigations, will transition to a dynamic competitive path assessment that flags paths as uncompetitive based on the application of a three-pivotal supplier test to transmission constraints that bind in RTPD. However, this transition introduces a gap in identifying and mitigating the offer prices of exceptionally dispatched resources that have local market power. The proposal addresses that gap as well as creating a set of default path designations that would be used if the dynamic assessment fails to produce a valid set of path designations.

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<sup>3</sup> See Wolak *et al.*, Note 2, *infra*.

Under the CAISO's proposal, ExD mitigation would have four elements.

1. First, resources that are exceptionally dispatched for system energy will generally not be subject to mitigation because they presumably face competition from all resources within the California ISO.
2. Second, the offer prices of resources exceptionally dispatched to solve transmission constraints that are modeled in the dispatch software will be subject to mitigation depending on whether those constraints were found to be competitive in prior applications of the dynamic competitive path analysis.
3. Third, the offers of resources exceptionally dispatched to solve transmission constraints that are not modeled in the dispatch software will be subjected to offer price mitigation as there will be no prior applications of the dynamic competitive path assessment on which to base a determination of whether they are competitive or not.
4. The fourth element of the proposal does not actually concern mitigation of exceptional dispatch but instead addresses the mitigation of offer prices when the dynamic competitive path assessment fails to run. The offer prices of these resources will be subject to mitigation depending on whether they were found to be competitive in prior applications of the dynamic competitive path analysis.

Elements 1 and 3 are features of the existing system that would not be modified by the proposal. Elements 2 and 4 represent revisions to the current system.

### **3. General Comments on the Proposal and Economic Effects of Exceptional Dispatch**

We support the CAISO's proposal as a bare minimum mitigation measure made necessary by changes to the process of designating transmission constraints as competitive or uncompetitive. The status quo approach will no longer be feasible, even if it were obviously preferable (which it is not). So-called "static" analyses of a constraint's competitiveness will no longer be performed as part of the local market-power mitigation process, and therefore cannot be used to determine whether the offers of a resource that is exceptionally dispatched should be subjected to mitigation.

We also believe, however, that the new rules will have to be closely monitored for their effectiveness. As with all things related to exceptional dispatch, there is little public information concerning exactly why resources are exceptionally dispatched or the process used to select the resources that are dispatched in this manner. It is therefore difficult to assess in advance whether the CAISO's proposal would adequately constrain the exercise of market power.

More generally, we note that exceptional dispatch has been a lingering problem since the implementation of MRTU. Despite periodic efforts to both analyze the sources and reduce the extent of exceptional dispatches, after several years there are still important questions left unanswered. ExD volume may be an indicator of weaknesses in the market's design and efficiency or, alternatively, might reflect substantial but transitory changes in the transmission system or resource

mix.<sup>4</sup> These types of changes lead to unexpected operating conditions that could require significant changes to model in the unit commitment and or dispatch software. Higher levels of ExD both increase the potential competitive advantage of those units receiving such calls, and cause potential loss of market revenues for other units.

In particular, one consequence of the use of exceptional dispatch to solve constraints is that market prices in the constrained region will not reflect the impact of the constraint. On the one hand, this may necessitate bid-cost recovery (BCR) payments to resources that are dispatched out-of-merit to solve the constraint. At the same time, this also means that LMPs for other resources that contribute to relieving the constraint may be lower than would be the case if the constraint were fully modeled (while LMPs may be inflated for resources that increase congestion on the constraint).

A second consequence that is important in the context of the California ISO's proposed mitigation design is that, because the CAISO's dispatch software is not used to determine the dispatch, the resources selected for exceptional dispatch may not provide the least-cost means of resolving the constraint. A third consequence which we note, but which is not important to the present discussion, is that because the CAISO's dispatch software is not used to determine the dispatch, there may be a potential for adverse cost or reliability impacts if the operators fail to recognize that the output of the exceptionally dispatched resource adversely impacts other constraints.

#### **4. Three Limitations of the Proposal**

The CAISO's proposal for mitigation of exceptionally dispatched resources has three limitations. First, given the dynamic nature of transmission constraints, the proposed rules for assessing the competitiveness of modeled transmission constraints, which are backward looking, may not provide sufficient insight into the competitiveness of a specific modeled constraint at the time it triggers an ExD call. As an extreme case, a modeled constraint might have been solved using ExD rather than the dispatch software because there was something about the current constraint such that the operators determined that only a single resource could be used to resolve it. In this situation, a "modeled transmission constraint" is logged as the reason for the exceptional dispatch, but there is something different actually going on. Without knowing why a modeled transmission constraint is solved using exceptional dispatch rather than the dispatch software, we have no basis for assessing whether the resource selected actually faced any competition.

A second limitation is that by its very nature, any exceptional dispatch may endow a form of market power to the units selected. In some cases only one resource can relieve the constraint that is triggering the exceptional dispatch call. In those cases, the CAISO's proposal will operate as intended and the resource will be subjected to offer price mitigation when it is exceptionally dispatched. In other cases, however, there may be a number of units capable of providing the necessary congestion relief for a modeled constraint, so that the transmission constraint is typically determined to be competitive by the dynamic competitive path assessment. Under the CAISO's proposal, these resources would not be subject to offer price mitigation when excep-

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<sup>4</sup>Such as the simultaneous outage of two units in the same nuclear plant.

tionally dispatched to solve the modeled transmission constraint. We cannot be confident, however, that this is the appropriate policy without further information regarding the reasons for the exceptional dispatch and the process behind the selection of the specific resource used. Even if there were five or six resources that could be used to solve a constraint (as would be the case for the many constraints the CAISO identified as modeled and competitive),<sup>5</sup> there is very little information about the process used to determine which resource would be exceptionally dispatched in situations like this. The selection of those units likely does not consider the offer prices amongst those units, but we have no specific knowledge of the criterion used to select units for exceptional dispatch or whether whatever criterion *is* applied is likely to be applied whenever similar conditions arise. Hence, we see a risk of circumstances in which resources that have been deemed competitive may nonetheless be able to take advantage of the prospect of an exceptional dispatch call to substantially raise their offer prices with little concern for competition in the event of such a call. Of course, in the absence of an ExD call, high offer prices will make a unit less likely to be in the market.

The possibility that units might not face competition in the exceptional dispatch process even on constraints determined to be competitive (based on the three-pivotal supplier test) might not be a problem if exceptional dispatch were a rare and largely unpredictable situation. In this case the probability of being exceptionally dispatched would be too low to warrant a resource raising its offer price to take advantage of the lack of competitive alternatives. Therefore, the potential for suppliers to abuse the prospect of an ExD call also depends upon how predictable such dispatch calls are. If calls were truly randomly distributed amongst many units, then we would be less concerned about the potential for circumvention of the CAISO's proposed mitigation design. However, an examination of the concentration of ExD overall indicates that, far from being randomly distributed, calls and energy volume are quite concentrated amongst a small number of units. In the twelve-month period from November 2011 through October 2012, about 70% of energy supplied through ExD came from just 5 units, and 90% of energy came from 20 units.<sup>6</sup>

A third limitation is that even if the operators carried out some kind of ad hoc economic analysis to choose the least-cost alternative before issuing ExD instructions to solve modeled transmission constraints, the resources initially selected to solve the constraint have the ability to substantially raise their offer prices *after* they are selected to take advantage of exceptional dispatch instructions having a number of hours of duration. Without information from the CAISO regarding the availability of tools or processes to monitor this, we do think it is reasonable to ask and expect the operators to continually re-evaluate their exceptional dispatch choices to account for changes in offer prices.

In light of the evidence we have seen, the CAISO proposal is far from overly aggressive in its mitigation. Absent further information from the CAISO regarding the circumstances in which

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<sup>5</sup> California ISO, Mitigation for Exceptional Dispatch in LMPM Enhancements Phase 2 – Revised Draft Final Proposal, October 30, 2012 p. 12.

<sup>6</sup>Based on data supplied by the CAISO Department of Market Monitoring (personal communication). These data apply to all exceptionally dispatched resources, not just those dispatched to solve modeled transmission constraints, but in the absence of data showing a different pattern for such resources, we conclude that we should assume that many exceptional dispatches, for any reason, have an element of predictability.

individual resources are exceptionally dispatched, or the tools and processes available to the operators in selecting such resources, we cannot assess whether the CAISO proposal will be effective in preventing resources that are deemed competitive from taking advantage of the use of exceptional dispatch to solve modeled constraints. Recall that this procedure is replacing one in which the vast majority of paths were assumed uncompetitive by default. We expect that this procedure will result in more paths being evaluated and found to be competitive, and therefore constitutes a relaxation of mitigation relative to the status quo. On the other hand, although we have not reviewed bidding data, we understand from DMM that there has *not* historically been a problem with offer prices being raised by units that are exceptionally dispatched for competitive constraints.<sup>7</sup>

While we have concerns regarding the use of the CAISO's design for determining the mitigation of resources exceptionally dispatched to solve modeled transmission constraints, we have concluded that it should work well in the other situation in which it would be applied, namely occasions when the dynamic competitive path analysis fails to run or run properly. In these circumstances, the dispatch software would still be used to choose the least-cost solution, so resources submitting high offers and facing effective competition would not be selected. In addition, while the prior outcomes of the dynamic competitive path analysis do not guarantee that a resource will face effective competition in the interval in which the dynamic competitive path analysis fails, a resource that generally faces effective competition is unlikely to find it profitable to dramatically raise its offer price in the hope of getting lucky when the dynamic competitive path analysis fails to run. Moreover, we do not expect failures of the dynamic competitive path analysis to be common or predictable.

## **5. Recommendation to Freeze Bids on Multi-period ExD Calls**

In addition to the mitigation proposed by the CAISO, we also make the following recommendation: in cases where a real-time exceptional dispatch call applies to multiple periods, a unit should not be allowed to change its bid from its level before the first ExD call. The reason for this recommendation is that we are concerned that units, having been informed of an ExD call for the first period, can raise their offer prices with the assurance that this exceptional dispatch will continue to guarantee sales for that unit. While there can be justifications for changing bids between a day-ahead offer and real-time, those reasons are much less compelling in the case of an intra-day change in offer prices. We therefore recommend that unmitigated bids be frozen at the level they were at as of the first ExD call.

## **6. The Need for More Transparency on Exceptional Dispatch**

Although we support the CAISO's proposal for real-time mitigation of ExD offers, we also wish to emphasize the need for more information about the scope and consequences of exceptional

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<sup>7</sup> A useful test in this regard would be to examine whether there is a difference in bidding behavior when units are dispatched for competitive constraints, relative to their bids when called upon to relieve uncompetitive constraints.

dispatch in general. In its opinion written in May, 2008,<sup>8</sup> the MSC supported the CAISO's original ExD design with the expectation that ExD would decline rapidly once the market matured.

*Although we expect that during the initial stages of market operation under MRTU, the CAISO may need to make more frequent use of (ExD) instructions because of unexpected glitches in the market software, once this initial market start-up phase is completed, (ExD) instructions should occur rarely.*

In the same opinion, the MSC also recommended that:

*the CAISO make every effort to reflect all significant and predictable constraints in its network model so that (ExD) instructions are truly that — exceptional — and not a significant and recurring source of revenue for generators.*

More than four years later, important questions about the role of ExD remain. Just how predictable are the constraints that trigger exceptional dispatch, and the calls made to specific units? Can those constraints be integrated into the market model, and how quickly? How can operators properly balance the need for reliability with the desire to not make exceptional dispatch designations to the same units every time a constraint is binding? The annual reports of the Department of Market Monitoring shed helpful light on these issues,<sup>9</sup> but more information is needed. We would like to see more systematic information about what is happening today when a resource is exceptionally dispatched, either for modeled or unmodeled reasons. Are they able to take advantage of this to raise offer prices? If not, why not?

Furthermore, why is it that exceptional dispatch is used to solve modeled transmission constraints and how do operators select the particular unit dispatched if the constraint is competitive (and hence there are at least four resources that can be chosen from)? The same questions apply for resources subjected to ExD because of system energy dispatches: if they are not mitigated today, what happens when the CAISO selects them? Do they raise their offer price in subsequent intervals?<sup>10</sup> How does the CAISO select them if they are meeting a general need for energy anywhere on the system?

Finally, we ask the same questions for resources subjected to ExD because system energy dispatches: if they are not mitigated today, what happens when the CAISO selects them? Do they raise their offer price in subsequent intervals?

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<sup>8</sup> Wolak *et al.*, Note 2, *supra*.

<sup>9</sup> For instance, see the DMM Annual Reports for 2009 (pp. 4.15 – 4.16, Fig 4.11), 2010 (pp. 101-103, Fig 4.13), and 2011 (pp. 158-159). Several useful metrics are reported, for instance:

- Prior to 2012, most ExD energy was “in-sequence” — meaning that its bid was less than the LMP. 2012, unfortunately, had many instances where this was not so.
- The “above market” cost of out of sequence exceptional dispatches (measured as difference in LMP and the price paid for ExD) has been relatively small, except in 2012

<sup>10</sup> In the years 2009-2011, DMM reports that they have not seen participants raise bid prices after receiving ExD in prior day or hours. This year has unfortunately been different.

The stakeholder process involving this proposal has again highlighted unfinished business with respect to the sources and execution of exceptional dispatch. We recommend that the CAISO make a concerted effort to provide more transparency about exceptional dispatch in the hopes that this effort will also contribute to solutions that can reduce its use.