Opinion on
LMPM Implementation in the Energy Imbalance Market

by

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July 7, 2014

1. Introduction

The Market Surveillance Committee (MSC) of the California Independent System Operator (CAISO) has been asked to comment on the implementation of Local Market Power Mitigation (LMPM) within the forthcoming Energy Imbalance Market. The recommendation of both the management and the CAISO Department of Market Monitoring (DMM) is to apply the CAISO's existing LMPM framework with one additional, previously proposed, change. This change would allow LMPM to be applied when there is congestion over the EIM transmission transfer limits between EIM balancing authority areas (BAAs), in addition to the planned policy of applying it to uncompetitive transmission constraints that are internal to the EIM BAAs, effective on the EIM go-live date of October 2014. On June 19, 2014, the Federal Energy Regulatory Commission issued two orders[1] approving the CAISO's and PacifiCorp's tariff amendments to implement the EIM. In the CAISO order, FERC ordered that the DMM monitor and submit reports on the competitiveness of the EIM, and furthermore indicated that it would consider an ISO filing that would propose inclusion of inter-BAA transfer constraints in the EIM LMPM procedures.

We have discussed several aspects of the EIM design, including LMPM, in detail in our October 2013 opinion on this topic,[2] and at several MSC meetings over 2013 and 2014.[3] Our previous

[1] FERC, "Order Conditionally Accepting Proposed Tariff Revisions to Implement Energy Imbalance Market," Docket No. ER14-1386-000, June 19, 2014, www.caiso.com/Documents/Jun19_2014_ Order-ConditionallyAcceptingEIMTariffRevisions_ER14-1386.pdf; FERC, "Order Conditionally Accepting in Part and Rejecting in Part Proposed Tariff Revisions to Implement Energy Imbalance Market," June 19, 2014, Docket ER14-1578-000, www.ferc.gov/whats-new/comm-meet/2014/061914/E-5.pdf

[2] See J. Bushnell, S. Harvey, B. Hobbs, and S. Oren, "Opinion on Initial Implementation of the Energy Imbalance Market and Related Market Design Changes," Market Surveillance Committee of the California ISO, October 28, 2013, www.caiso.com/Documents/FinalOpinion_EnergyImbalanceMarketOct30_2013.pdf

[3] The EIM and, in particular, the application of LMPM to EIM have been discussed in MSC meetings in Folsom on July 2 and September 6, 2013, and March 11 and May 19, 2014. In addition, MSC members have participated in a number of stakeholder calls discussing the EIM design and implementation.

opinion expressed strong support for the creation of the EIM. However, in contrast to the market structure within CAISO, the supply and demand for energy in the areas that will begin participating in the EIM in October 2014 will be dominated by the vertically-integrated assets of PacifiCorp. There will remain in these areas a need for balancing services to accommodate the varying supplies of non-utility (particularly intermittent) generation as well as a relatively small amount of non-PacifiCorp load. With the adoption of the EIM, the pricing of imbalance energy will transition from an administrated rate overseen and approved by FERC to market-based pricing determined by the EIM dispatch. This transition would not be appropriate if the market-based balancing price were materially impacted by the exercise of market power.

In this opinion, we summarize the CAISO proposal for modifying the LMPM framework (Section 2) and our assessment of it (Section 3). In brief, we support the proposed change to the LMPM framework, as recommended by ISO management and DMM, as the best way, within the CAISO's current general approach to LMPM and based on the information currently available regarding the resources that will be participating in the EIM market, to deal with a market structure that is quite different than that inside the CAISO BAA. Without the proposed change, there is a risk that transmission customers within the EIM BAAs could be exposed to significant potential for market power in the supply of five minute imbalance energy. As discussed in our October 28, 2013 opinion,[4] it is not clear whether it will in practice be profitable for PacifiCorp to raise offer prices on its energy enough to cause transmission constraints to bind in order to sell imbalance energy at inflated prices, but it is a possibility that the CAISO should address in its initial design.

There are features of the energy imbalance markets in the PacifiCorp BAAs that will prevent the CAISO LMPM framework from being fully effective in mitigating market power within these non-CAISO balancing areas. The kind of must-offer obligation that applies within the CAISO region will not apply to the rest of the EIM, and it is not clear at this point in time what, if any, kind of must offer obligation will in practice apply to PacifiCorp in its role as the balancing authority area operator. Moreover, the transfer capability between the CAISO and other EIM BAAs available for use by the EIM will apparently be determined by PacifiCorp Energy with no obligation to make unscheduled transfer capability available to the EIM.[5]

Conversely, the CAISO's current LMPM design is structured to identify the potential for the exercise of locational market power in meeting load within a constrained region, and substantial changes would be necessary to adapt it to more accurately identify the potential for the exercise of market power in the supply of imbalance energy. Since it appears likely that the EIM will be expanded to include other balancing areas in the West (a development that we very much welcome), it will be important to eventually consider whether fundamental or further incremental changes to the CAISO LMPM framework will be desirable in the future. In the meantime, we believe that it will be important for DMM to monitor the MW quantity of supply offers in the non-CAISO BAAs and the amounts of transmission capability made available between the CAISO and the other BAAs to assess whether anti-competitive behavior is a problem and conversely

[4] See the discussion in Bushnell et al., op cit., pages 27-29.

[5] See PacifiCorp OATT, Attachment T, Section 5.1 Docket ER14-1578.

whether the proposed mitigation design is chronically triggering mitigation at times when there is no potential for the exercise of locational market power in the supply of imbalance energy, as would be the case when PacifiCorp is a net buyer of imbalance energy.

2. The CAISO Proposal for Modifying the LMPM for Application in the EIM

The guiding principle of the CAISO's local market power mitigation framework is that within the CAISO BAA, the potential for the exercise of market-power is likely to be significant only within constrained regions. It is generally accepted that in the absence of congestion, the CAISO market is workably competitive, so that prices are close to marginal cost at such times. Consequently, market-power mitigation would only be needed at times and locations where transmission constraints limit the access of sufficient number of competitive suppliers to such a constrained region. The CAISO approach to mitigating local market power is to first identify where such market power might be exercised, and then to mitigate bids of generation units able to meet load within the constrained region.

The identification step in the CAISO LMPM framework consists of identifying transmission paths that are both congested and deemed uncompetitive by a dynamic structural test (three pivotal supplier test), excluding from the analysis certain paths that are a priori designated as competitive. Since the broader CAISO market is considered competitive, this test has not historically been applied to intertie transmission constraints, which lie on paths to non-CAISO balancing areas. Even if CAISO were isolated from the rest of the WECC, its market should be reasonably competitive in the absence of internal congestion, given the present structure of the market and degree of forward contracting.

This assumption of a competitive market structure at the balancing area (BAA) level does not necessarily apply to the non-CAISO EIM areas. As DMM has described,[6] PacifiCorp controls 97% of the non-wind capacity that is expected to initially participate in PacifiCorp EIM BAAs. Thus, even in the absence of congestion internal to the PacifiCorp BAA, there is sufficient concentration of ownership of the generation expected to initially participate in the real-time imbalance market that mitigation could potentially be necessary.[7] Within the existing LMPM framework, the most straightforward way to accomplish this is to treat the EIM capacity on interties into these EIM areas (as well as internal constraints) as uncompetitive. This means that when the EIM transfer limit is binding (e.g., available transmission capacity is fully utilized in the real-time dispatch) into the EIM area, the three pivotal supplier structural test will be applied to that

[6] Of the total of 5480 MW of non-wind capacity listed in Tables 1 and 2 in "Assessment of Potential Market Power in Energy Imbalance Market," Department of Market Monitoring, California ISO (updated June 30, 2014, http://www.caiso.com/Documents/UpdatedAssessment-PotentialMarketPower-EnergyImbalanceMarket_corrected.pdf), 5320 MW is owned by PacifiCorp and 160 MW is owned by others.

[7] While it might be that mitigation would always be necessary because there is so little contested supply (e.g., generation not owned by PacifiCorp), it is also true that the *demand* for balancing services may also be quite modest.

entire EIM area. It is likely that the area will fail this test in the case of the PacifiCorp BAAs, meaning that all units will be subject to potential mitigation during periods in which the limit is constrained for imports into the PacifiCorp BAAs.[8]

Importantly, the CAISO's LMPM bases mitigated bids upon the higher of (1) DMM's estimate of unit-level costs (the default energy bid) and (2) the competitive baseline LMP, unless the actual bid is lower, in which case it is not mitigated. In this context, the competitive baseline LMP would be the CAISO energy price for import supply into the PacifiCorp BAAs absent congestion into or within to the PacifiCorp BAAs. In this way, the incremental cost of CAISO import supply would constitute a floor on the mitigated bids of units within a non-CAISO EIM BAA when the transfer limits bind from the CAISO into the non-CAISO BAA. To the extent that the cost of incremental CAISO supply exceeds the calculated default energy bid of units bidding into the EIM in PacifiCorp areas, the prices those units receive will not be sensitive to the precise default energy bid calculated for those units.

3. Assessment of the Proposal

We support this change to the LMPM framework and believe it a worthwhile step to support the competitiveness of the short-term energy imbalance market in EIM BAAs. This is because we believe that until the level of participation by non-PacifiCorp supply in the short-term energy imbalance market and the size of non-PacifiCorp imbalances are better known, we cannot be assured that the balancing energy market in the PacifiCorp BAAs will be workably competitive. There is currently uncertainty about the level of participation in the EIM by non-PacifiCorp generation located in PacifiCorp BAAs, and it is also difficult to forecast the level of demand for imbalance energy services by entities other than PacifiCorp. Experience with EIM may increase participation on both the supply and demand sides, but currently the supply of energy in the real-time energy imbalance market appears likely to be dominated by PacifiCorp. Therefore, this market should be treated as potentially uncompetitive for purposes of the LMPM when transmission and scheduling constraints into the EIM BAAs are binding.

However, there are two factors that increase the potential for market power and possibly dilute the effectiveness of the LMPM mechanism in non-CAISO BAAs. First, and most importantly, participation in the EIM by entities other than PacifiCorp is voluntary. Therefore while LMPM can mitigate the prices of offers into the EIM, it cannot compel suppliers to provide those offers

[8] Transmission pricing and access is another potential issue that could limit participation by non-PacifiCorp entities in the PacifiCorp BAAs. Although the FERC PacifiCorp EIM order does not allow PacifiCorp to charge an incremental non-firm transmission rate to participating resources, such resources must have point-to-point or network transmission service from PacifiCorp. If the effect of this is to preclude non-PacifiCorp resources from participating in the EIM, then this could restrict competition in the short run. On the other hand, allowing non-PacifiCorp resources free access to use of transmission in real-time, without having paid for point-to-point or network service could encourage free riding, which could discourage investment in transmission in the long run and thereby harm market competitiveness, while also providing inefficient incentives to shift transmission scheduling from forward markets into real-time. We simply note at this point that policies concerning short- and long-term transmission pricing and access can have important implications for competition and market efficiency, and those implications should be carefully considered in designing those policies.

in the first place. There is no general must-offer obligation (MOO) in non-CAISO BAAs. Moreover the extent of any MOO that would apply to PacifiCorp in its role as the balancing authority area is unclear. Therefore, even though the LMPM mechanism restrains the ability of dominant suppliers to raise their price offers in a way that affects market prices, the risk remains that a dominant supplier could raise prices by instead reducing the capacity they offer into the EIM.

Second, the amount of transfer capacity made available to the EIM will also be voluntarily offered into the market. In contrast to internal CAISO transmission, whose capacity is overseen by CAISO itself, the transfer capacity available to the EIM market will be determined by PacifiCorp Energy on an hourly basis.[9] This makes it even more important for the LMPM mechanism to be able to apply mitigation to these constraints, as a market entity will be able to influence the frequency of "congestion" on these transfer constraints through the amount of capacity made available to accommodate EIM transactions.

Unless a must-offer obligation is imposed on the non-CAISO BAAs, or unless they decide to become or join a FERC-regulated RTO, it will likely be difficult to alter these two factors, in which case, generator participation and transfer capacity availability will remain voluntary. Possible restraints on possibly anticompetitive behavior through physical withholding might then be limited to the relatively blunt instruments of FERC review and potential modification or cancellation of market-based rate authority,[10] actions by state utility commissions, in the case of generation assets that they regulate, and NERC and WECC rules applying to balancing authority area operators. We therefore recommend that DMM monitor the quantities of capacity offered into the non-CAISO BAAs and the amounts of transfer capability made available to the EIM for possibly anti-competitive behavior.[11]

Another factor impacting the competitiveness of the EIM imbalance market is that the competitive import supply available from the California ISO will reflect GHG costs, which the California ISO's Department of Market Monitoring has estimated will raise California ISO costs by around $6 per megawatt hour relative to what they would otherwise be.[12] We described the po-

[9] See PacifiCorp OATT, Attachment T, Section 5.1 Docket ER14-1578.

[10] FERC, Companies with Market-Based Rate Authority, www.ferc.gov/industries/electric/gen-info/mbr/list.asp

[11] We have also been informed that transfer capacity between the PacifiCorp-West BAA and the CAISO as well as the ability of counterflows to offset transfer capability between PacifiCorp-West and East BAAs are restricted by non-PacifiCorp policies concerning dynamic transfers. We note that such restrictions can result in less efficient use of transmission assets, with consequent economic and perhaps environmental costs. This of course would be counter to the goals of establishing the EIM. We recommend that DMM also monitor whether fewer benefits will being realized from the EIM as a result of these policies.

[12] See California ISO, Department of Market Monitoring, 2013 Annual Report on Market Issues and Performance," pp. 128-136.

tential for these GHG costs to enable PacifiCorp to realize small increases in imbalance energy revenues in our previous EIM opinion.[13]

An important factor to consider in monitoring the EIM market is that in the CAISO, market power mitigation is designed to potentially apply to *all* power transacted, while the relevant market in other EIM areas will be a much smaller balancing market. Even if structural tests indicate that a single firm dominates the aggregate market, this may not be fully reflective of the competitiveness of just the balancing portion of a region's market. There is currently very little data available about the historic, let alone future volume and composition of balancing supply and demand in the non-CAISO areas of the EIM.

In general, monitoring information will be very important for informing stakeholders and regulators about the benefits and competitiveness of the EIM as it expands to include PacifiCorp and eventually other BAAs in the western interconnection. Furthermore, it will be important to review the effectiveness of the CAISO LMPM framework and whether further adjustments or even a change in paradigm might be desirable as the EIM enlarges and encompasses other BAAs with diverse regulatory structures, resource mixes, and ownership patterns.

[13] See Bushnell et al., op. cit., pp. 28-29.