

Memorandum

To: ISO Board of Governors
From: Eric Hildebrandt, Director, Market Monitoring
Date: October 28, 2015
Re: **Market Monitoring report**

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memo provides comments by the Department of Market Monitoring (DMM) on Management's proposal for enhancements to the energy imbalance market design, along with a summary of other recent enhancements relating to market power mitigation in the energy imbalance market (EIM). Several enhancements to the EIM design and related market power mitigation provisions have been incorporated in year 1 phase 1 enhancements scheduled for implementation in November 2015 when NV Energy (NVE) joins the EIM. DMM has also worked closely with the ISO and stakeholders to assess and develop several market design changes as part of the second phase of this stakeholder initiative. DMM is very supportive of the additional features included in Management's proposal for year 1 phase 2 enhancements to the EIM.

BACKGROUND

EIM market performance and behavior

As noted in prior reports, performance of the energy imbalance market has improved over the course of 2015.¹ During most intervals, prices in the EIM have continued to be highly competitive and have been set by bids closely reflective of the marginal operating cost of the highest cost resource dispatched to balance loads and generation. The price discovery provisions approved under the Commission's December 1, 2014 order have effectively mitigated prices during a relatively small portion of intervals when energy or flexible ramping constraints have had to be relaxed for the market software to balance modeled supply and demand.

¹ Insert reference to last board memo M report.

Report on Energy Imbalance Market Issues and Performance, Department of Market Monitoring, September 25, 2015,
http://www.caiso.com/Documents/Sep25_2015_Department_MarketMonitoringReport_Performance_Issues_EIM_July2015_ER15-402.pdf

Since the first quarter of 2015, prices in the energy imbalance market that would have resulted without these special price discovery provisions have been about equal or lower than market bilateral prices. These bilateral markets reflect prices that were charged for imbalance energy in the PacifiCorp balancing areas prior to implementation of the energy imbalance market.

In addition, bids for most capacity continue to be slightly below or slightly above default energy bids used for market power mitigation. When bids are mitigated, due to market power mitigation provisions, these procedures generally result in modest reductions in bid prices

Structural competitiveness of EIM balancing areas

Although the EIM has been highly competitive in terms of market conduct and performance, the EIM has remained structurally non-competitive since all supply bid into the EIM is currently controlled by a single supplier within each EIM balancing area. The NVE balancing area will also be structurally non-competitive, since NV Energy owns and operates all of the generating resources within the NVE balancing authority that it is registering to participate in the EIM.

Under section 29.39(d)(2) of the ISO tariff, as new balancing areas join the EIM, the ISO must submit a filing to FERC, along with a structural assessment of market power, in order to gain approval to include these new EIM transfer constraints in the ISO's market power mitigation procedures. In July 2015, the ISO filed a petition with FERC requesting authority to include EIM transfer constraints into the NVE balancing area in market power procedures based on an analysis of structural market power by DMM.²

DMM expects that the EIM as a whole will become more structurally competitive with the addition of NVE as a result of the additional transfer capacity that will be available between the ISO and NV Energy, and between NVE and the PacifiCorp East balancing areas. However, while this transfer capacity is likely to dramatically increase the amount of competitive supply from the ISO into the NVE and PacifiCorp balancing areas during many hours, the supply of EIM transfers from the ISO to these EIM balancing areas may be limited or even zero under some circumstances. Therefore, as noted in the ISO's petition, DMM could not conclude that the NVE balancing area would be structurally competitive, and recommended that the EIM transfer constraints into the NVE balancing area be included in the ISO's market power mitigation procedures.

As discussed in the following section, ISO's market power mitigation procedures needed to be slightly modified to reflect enhancements in the way EIM transfer constraints are modeled as a result of EIM year 1 enhancements scheduled for implementation in November 2015 when NV Energy joins the EIM.

² *Petition of the California Independent System Operator for Market Power Mitigation Authority*, July 24, 2015, http://www.caiso.com/Documents/Jul24_2015_Petition_MarketPowerMitigationAuthority_EIM_TransferConstraintsbetween_CaliforniaISO_NVEnergy_ER15-2272.pdf

ENERGY IMBALANCE MARKET YEAR 1 ENHANCEMENTS: PHASE 1

As discussed in DMM's March 2015 memo to the Board, the first phase of energy imbalance market year 1 enhancements scheduled for implementation when NV Energy joins the EIM included two key design changes which affected market power mitigation.³

EIM transfer limit constraints

The most important of these design changes involve how transfer limit constraints between EIM balancing authority areas will be modeled. With this new approach, EIM transfer constraints were modified so that there would be a more intuitive constraint enforced for each scheduling limit between each EIM balancing area. This replaced the previous, more complicated method of enforcing a transfer constraint for each possible combination of groups of EIM balancing areas. The new approach is designed to maximize the use of transmission rights made available in the EIM on different interties while avoiding any inappropriate impact this has on locational prices within EIM areas. DMM believes this approach can effectively balance these objectives, and will continue to monitor and assess this market design feature after implementation.

This modification to how transfer limits are modeled also required related modifications in market power mitigation provisions. The ISO's answer to comments on its petition requesting authority to include EIM transfer constraints into the NVE balancing area in market power procedures describes these modifications and provides specific examples of how mitigation will be triggered under different congestion and pricing patterns between the ISO, NVE and PacifiCorp balancing areas in the EIM.⁴ These examples illustrate how this market design will ensure that mitigation is triggered when structural market power exists and may impact market prices, and will not be triggered when EIM balancing areas are structurally competitive due to access to sufficient competitively priced supply from other EIM balancing areas.

Greenhouse gas bidding rules

The first phase of EIM enhancements scheduled to take effect when NV Energy joins the EIM also includes two changes to greenhouse gas bidding rules. First, bidding rules were modified to allow entities to "flag" energy bids that could be deemed delivered to the ISO versus being available only to meet demand within other EIM balancing authority areas not subject to California's cap and trade program. In addition, the GHG

³ Memorandum to ISO Board of Governors from Eric Hildebrandt, RE: Department of Market Monitoring report, March 19, 2015. http://www.caiso.com/Documents/Department_MarketMonitoringReport-Mar2015.pdf

⁴ *Answer of the California Independent System Operator Corporation to Comments on Petition for Market Power Mitigation Authority*, August 28, 2015, pp.9 – 15. http://www.caiso.com/Documents/Aug28_2015_Answer_Comments_Petition_MarketPowerMitigationAuthority_EIMTransferConstraint_CaliforniaISO_NVEnergy_ER15-2272.pdf

component of bids that can be deemed delivered to California is now subject to a cost-based cap that reflects the estimated cost of GHG emission credits.

These changes to greenhouse gas bidding rules implement recommendations made by DMM during the initial EIM design to encourage EIM participation and address stakeholder concerns. As noted in DMM's March 2015 Board memo, DMM supports these changes and will monitor their impact on market behavior and performance.

ENERGY IMBALANCE MARKET YEAR 1 ENHANCEMENTS: PHASE 2

DMM has also worked closely with the ISO and stakeholders to assess and develop several market design changes as part of the second phase of this stakeholder initiative. DMM is very supportive of the additional features included in Management's proposal for EIM year 1 phase 2 enhancements to the EIM.

Market power mitigation for EIM transfer constraints

While finalizing the market power mitigation provisions in effect at the time the EIM was implemented in 2014, the ISO committed to looking at a more dynamic test for triggering market power mitigation for EIM transfer constraints. This dynamic trigger would have made an assessment on whether to deem an EIM transfer constraint into an EIM BAA competitive, using potentially very different logic than the three pivotal supplier test used for all other constraints. If instead the new dynamic trigger had deemed the transfer constraint competitive, then the transfer constraint would be excluded from the traditional market power mitigation process.

DMM supports the ISO's proposal to not add new market power logic that could exclude EIM transfer constraints from the traditional market power mitigation processes. The EIM transfer constraints create isolated local areas within the larger system in much the same way as flow-based transmission constraints do. Therefore, when transfer constraints bind and elevate prices in EIM BAAs relative to the broader system, the constraints creating this price separation should be subjected to the market power mitigation processes like other constraints that create local price separation. It would be more appropriate to address any concerns over the fundamental logic of the three pivotal supplier test in a way that could adjust that logic for all constraints that create price separation between local areas.

Allocation of EIM transfer constraint congestion revenue

DMM supports the ISO's proposed revisions to the allocation of congestion revenues from some types of EIM transfer constraints. These revisions would only apply to transfer constraints at interfaces which link two EIM balancing areas along with one or more non-EIM balancing areas. This type of interface is represented by a separate scheduling limit for each EIM balancing area.

Currently, real-time congestion revenues on this type of EIM transfer constraint are divided evenly among the connected EIM balancing areas. Under this design, an EIM balancing area that procures or builds an additional MW of transmission capacity that increases the scheduling limit for that EIM balancing area would only receive half of the congestion revenues from this additional transfer capacity. Since an EIM area would not receive all of the congestion revenues from the incremental transmission capacity it procures under this scenario, this may not provide incentives for procuring incremental transmission capacity to be used for EIM transfers over these interfaces.

Under Management's proposed year 1 phase 2 enhancements, each EIM balancing area will receive the congestion revenues associated with the scheduling limit for its own balancing area. DMM agrees that the ISO's proposed changes for allocating congestion revenues is more efficient and equitable than this current approach.

Some stakeholders expressed concern that allocating all congestion revenues associated with an EIM transfer constraint to the BAA in which the constraint is located would increase incentives for a BAA to withhold transfer capacity from EIM in an attempt to maximize congestion revenues.⁵ If such transmission withholding were to occur, it could then reduce incentives for third party generators to participate in EIM by depressing prices paid to generators for their incremental real-time production. DMM does not believe this concern warrants adjusting the ISO's proposal at this time.

Transmission rights between two EIM balancing areas that are not made available for EIM transfers should, under most conditions, still be used for base schedules that transfer power between the two EIM balancing areas. This would not generally constitute withholding of transmission capacity. Transmission capacity between two EIM balancing areas would only be potentially withheld if some portion of an EIM balancing area's scheduling rights to an EIM interface is not made available to support EIM transfers and is not ultimately used to schedule power between the two EIM balancing areas.

DMM believes the ISO's current proposal does not need to include measures to mitigate potential withholding of EIM transfer capacity for two main reasons. First, our current understanding is that in current and prospective EIM balancing areas, the parent company of the EIM entity will generally control most of the generation that would be dispatched up in real-time to support the real-time transfers that create the real-time congestion revenues. Therefore, increases in congestion revenues from withholding of EIM transfer capacity would likely be offset by decreased prices received by the parent company's generators. As a result, we do not currently anticipate conditions arising with the magnitude and predictability that would incent EIM entities to develop a strategy of withholding EIM transfer capacity.

⁵ See the comments on the Draft Final Proposal by Southern California Edison and Six Cities available at: <http://www.caiso.com/informed/Pages/StakeholderProcesses/EnergyImbalanceMarketYear1Enhancements.aspx>

Moreover, the determination of the actual allocation of congestion revenues to specific companies within each EIM balancing area remains the responsibility of each EIM entity.⁶ The ISO's proposal only specifies the balancing area that should be allocated the EIM transfer congestion revenues. Depending on how the EIM entity's OATT specifies the actual final allocation of the congestion revenues received by the balancing area, the company that ultimately receives EIM transfer congestion revenues may not be the same company that makes the decision on whether or not to withhold EIM transfer capacity. Therefore, each EIM entity's determination of the final allocation of EIM transfer congestion revenues may effectively mitigate incentives to withhold transfer capacity without undermining the ISO's design principle of directing congestion revenues to the EIM balancing area that procured the congested transmission capacity.

In theory, scenarios could arise that may create incentives for an EIM entity to withhold EIM transfer capacity in order to impact prices in a balancing area and increase congestion revenues. If unused transmission capacity between two EIM areas is not being made available as EIM transfer capacity, and this withholding is contributing to locational price differences that benefit the withholding entity, we would support the ISO considering future design measures to mitigate this potential exercise of market power.

However, under this scenario, we recommend that more thoughtful options are considered besides simply reverting to the EIM market design currently in production. The current approach of evenly splitting the EIM transfer congestion revenues between the two EIM areas that share an interface with a non-EIM balancing area may not be the most appropriate or effective method of mitigating the exercise of such market power. While allocating half of congestion revenues to companies in another EIM area would indeed reduce the incentives for an EIM entity to withhold transfer capacity, there may be more targeted mitigation methods that would be more effective and equitable.

⁶ For example, allocation as determined by the OATT of the EIM entity to different parties within the BAA that may have funded transmission revenue requirements.