

**Opinion on Defining “Workable Competition” with
Respect to the Creation of New Zones**

By

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Introduction

The California ISO Tariff calls for the Board of Governors to adopt criteria for assessing whether existing or proposed congestion zones are “workably competitive”. The Department of Market Analysis (DMA) has prepared a white paper that proposes specific criteria for making this assessment. We generally support the ten criteria given in the January 29, 2004, DMA document entitled “Proposed Criteria for Defining ‘Workable Competition’ with Respect to the Creation of New Zones.” However, it is our view that the relevant question to be addressed by the ISO in deciding whether to create a new zone is not whether it is workably competitive, but whether its creation will increase the overall efficiency of California's energy and ancillary services markets. In particular, we believe that a new zone should be created only if it is expected to improve overall market efficiency.

Following a discussion of the context for this opinion, we describe our major concerns with the DMA's proposed criteria. Our concerns relate primarily to the criteria for creating a new zone within a looped network versus a radial network model. The criteria proposed by the DMA advocates maintaining a radial network when creating a new zone. We do not believe that the ISO should preclude creating a new zone using a looped network structure. The costs and benefits of looped network model versus a radial network model should be considered in the decision to create a new zone. If the net benefits to market efficiency from adopting a looped network model are greater than those for a radial model and exceed any additional implementation cost, then the ISO should adopt a new zone using a looped network model. The remainder of this opinion describes the logic underlying our view that enhancing overall market efficiency—producing at the lowest possible total cost and pricing as close as possible to the cost of producing the last unit sold—should be the determining factor in the new zone creation decision. This discussion emphasizes the crucial role of the California ISO's market power mitigation mechanism in the new zone creation decision.

Background

The ISO Tariff calls for the creation, modification, and elimination of zones based on two criteria: (1) the cost of intra-zonal congestion mitigation and (2) the existence of workably competitive generation markets on each side of the corresponding inter-zonal interface. According to the second criterion, the Tariff distinguishes between “Active”

and “Inactive” zones. An Inactive Zone need not have workably competitive generation markets on both sides of the constraint. The costs associated with managing congestion on an inactive Inter-Zonal interface are allocated to the Participating Transmission Owners (PTOs) that own the interface. The ISO currently has two Inactive Zones, the San Francisco Zone and the Humboldt Zone.

Since the ISO began operation in April 1998, only one new zone has been created—ZP26. The “Active” and “Inactive” designation of all other existing zones has remained the same. The ISO Governing Board approved ZP26 as an “Active Zone” in August 1999. This approval was based on an assessment provided by the ISO staff that demonstrated the proposed ZP26 zone was necessary because of the high cost of managing intra-zonal congestion in SP15 under the then existing two-zone model, and the DMA concluded that the new ZP26 zone could be expected to be workably competitive. However, this competitive assessment did not provide general criteria for assessing workable competition but instead examined competitive issues relating specifically to the new ZP26 zone.

Ten Criteria Proposed by DMA and Looped Networks

The ten criteria proposed by the DMA for assessing workable competition for new zone creation provide a comprehensive procedure for the ISO to follow in making this assessment. These criteria deal with all of the major mechanisms by which suppliers can exercise local market power. However, we are concerned that these criteria place too much emphasis on preserving the ISO’s radial zonal network model. The first criterion states that new zones should be created in a radial network model to preserve “the nature and properties of FTRs and forward congestion management under the existing Tariff.” While we understand that it may be costly to re-allocate FTRs to account for a looped network structure, we do not believe that the ISO should preclude creating a new zone using a looped network structure.

If a looped network structure more accurately reflects the realities of operating the transmission network and would result in the greatest gain in overall market efficiency, after accounting for the costs of re-allocating FTRs for a looped network model, then the ISO should adopt such a network model. This has the benefit of allowing the ISO to avoid splitting existing Branch Groups according to pre-specified Power Flow Distribution Factors (PTDFs) as described in the second criterion. Instead, the ISO could use the actual looped network configuration that is expected to exist that day to operate the day-ahead and hour-ahead congestion management process. The sixth criterion listed in the white paper notes that the network model would be kept radial in the forward market but a looped network model could be used in the real-time market. Creating a looped network model in the forward market would reduce the opportunities for suppliers to exploit differences between the network model used in the forward market and the network model used for real-time system operation to degrade system reliability and market efficiency.

These concerns with creating a new zone within a radial network model do not mean that ISO should only consider new zones within the context of a looped network model. Instead the costs and benefits of looped network model versus a radial network model should be considered in the decision to create a new zone. If the net benefits to market efficiency from adopting a looped network model are greater than those for a radial model, then the ISO should adopt a new zone using a looped network model.

Assessing Workable Competition

We believe it is important to emphasize that creating a new zone does not change the physical configuration of the transmission network or the ownership of generation units throughout the network. Creating a new zone does have the potential to price transmission congestion currently occurring in the larger zone in a more transparent manner. This more transparent pricing can change the incentives generation unit owners have to schedule their units in the day-ahead and hour-ahead markets and produce output in the real-time energy market. However, the creation of a new zone does not change the overall competitiveness of the ISO's energy or ancillary services markets. Rather, it changes the rules within which competition or market power is played out. Poor rules can exacerbate market power, but good rules do not eliminate it. For instance, as explained below, creating a new zone may limit the incentives for a supplier to exercise local market power. In such cases, overall competitiveness is unchanged, but an artificial opportunity to exercise pre-existing local market power is reduced. Such a change may be desirable, even if significant market power remains. On the other hand, a new zone does not necessarily lessen such opportunities; in fact, it can enhance opportunities for suppliers to exercise unilateral market power in supplying incremental energy and therefore reduce the overall efficiency of the California energy and ancillary services markets.

Consequently, it is our view that the relevant question to be addressed by the ISO is not if a new zone is workably competitive, but whether the creation of a new zone will increase the overall efficiency of California's energy and ancillary services markets.

Creating a New Zone that Enhances Market Efficiency

Certain pre-existing circumstances are necessary for the creation a new zone to enhance overall market efficiency. Without these pre-conditions, creating a new zone is likely to reduce rather than improve market efficiency given the California ISO's current local market power mitigation (LMPM) mechanism. The clearest case for a new zone enhancing market efficiency occurs when there is a concentration of generation units within an existing congestion zone, and these suppliers are able to schedule a significant quantity of energy in the day-ahead and hour-ahead markets that these suppliers are unable to provide in real time because of transmission constraints within the congestion zone. Because the California ISO's zonal market design does not recognize these intra-zonal constraints in the day-ahead and hour-ahead scheduling process, these energy schedules must to be reduced in real time by the ISO accepting decremental energy (DEC) bids from these units out of merit order. By definition, these out-of-merit-order

DEC bids are below the real-time energy price in the congestion zone. Because of inadequacies in the ISO's current LMPM mechanism, these DEC bids can be substantially below the real-time energy price and may even be negative, which means that the ISO must pay a supplier to reduce its final energy schedule because of transmission congestion within the zone.

This process of scheduling in the day-ahead and hour-ahead markets according to zonal boundaries and operating the system in real-time according to all transmission constraints (both intra-zonal and inter-zonal), combined with an inadequate LMPM mechanism, allows suppliers the opportunity to engage in what is commonly called the "DEC Game."

Creating a new zone can significantly reduce the profitability of suppliers engaging in this behavior because it converts what was formerly an intra-zonal transmission constraint into an inter-zonal constraint. Consequently, the transmission congestion, which was caused by suppliers attempting to supply more energy from their generation units than can leave the local area, results in an increase in the congestion charge suppliers must pay in the day-ahead or hour-ahead market to deliver their energy to a location outside of this generation-rich region. However, as discussed within the context of the January 13, 2003 MSC opinion on "Managing Congestion Costs in the Miguel-Imperial Valley Region," if the suppliers in this generation-rich area have seller's choice forward contracts, the incentive to reduce the cost of delivering their energy to higher priced areas may be diminished. This is because, under some interpretations of the seller's choice option, the seller may be indifferent to congestion charges for delivery to the load, or may even be able to collect the difference between the zonal price where the energy is deemed delivered and the zone where the energy is produced as a revenue stream.

This logic implies that under the current LMPM mechanism, the creation of a new zone is most likely to enhance market efficiency if the new zone is a geographic area that contains substantial generation and very little load and the suppliers in this region do not have a substantial quantity of their energy committed in seller's choice forward contracts. Under these circumstances, the creation of a new zone will cause the suppliers located in this new zone to bear the costs of congesting the available transmission capacity out of the region. The supplier in this zone with the greatest willingness to produce energy will bid the lowest price to use the congested interface (if the supplier has a contract to deliver to a buyer outside the generation pocket).

Creating a New Zone that Reduces Market Efficiency

There are also circumstances where the creation of a new zone could reduce market efficiency. This counter-intuitive result could arise for several reasons. First the new zone may be a poor match for the underlying physical network. Thus, although consideration of *all* transmission contingencies allows for the fullest and most accurate representation of the network, when only *some* contingencies are reflected, the incremental recognition of a single additional transmission constraint may further distort,

rather than improve, the ability of the forward congestion process to match actual flows. Second, there are different regulatory tools available for the mitigation of market power on a zonal basis or regional basis, as opposed to more locally. A reduction in the ability to mitigate market power may more than offset any other efficiency gains from the new zone. Last, pre-existing arrangements, such as long-term contracts, may distort otherwise beneficial incentives provided by a new zone.

The ISO's current LMPM mechanism provides greater protection against the exercise of local market power exercised in the relief of intra-zonal congestion relative to the relief of inter-zonal congestion. If a supplier's energy is taken out of sequence within the larger zone, its bid would be subject to the ISO's automatic mitigation procedure (AMP) mechanism for intra-zonal congestion. Bid mitigation for intra-zonal congestion relief is performed after the real-time market operates each hour. Each accepted out-of-sequence incremental energy bid is compared to the generation unit's bid reference level and if the bid is higher than the minimum of \$50/MWh or 200 percent above the zonal market-clearing price, then this bid is mitigated to its reference level. In contrast, the system-wide AMP conduct test is violated only if the unit's bid is higher than the minimum of \$100/MWh or 200 percent above that unit's bid reference price. In addition, even if this conduct test is violated, that unit's bid is not subject to mitigation unless accepting this bid would increase the market-clearing price by more than \$50/MWh or 200 percent. Because of the tighter conduct test threshold and the lack of a market impact test, the AMP mechanism for intra-zonal congestion provides more protection against the exercise of market power than the system-wide AMP mechanism.

This logic implies that if a new zone was created, this bid would be more likely to be taken in sequence within this smaller geographic region and therefore not subject to mitigation as long as this bid does not fail the system-wide AMP conduct and market impact tests, an extremely unlikely outcome. This supplier would have greater opportunities to earn transmission counter-flow revenues in the day-ahead and hour-ahead markets and higher energy prices in the real-time market for this unit and all other generation units in this new zone supplying energy in real time. The counter-flow revenues would accrue to this supplier because of its willingness to supply more energy in the generation-poor zone and, at the same time, increase its demand for energy in the generation-rich zone; this enables that supplier to earn the inter-zonal transmission charge between these two zones in the day-ahead or hour-ahead markets. In the real-time market, all suppliers located in this new zone would most likely receive a high zonal energy price because this supplier is the only or one of a few able to supply INC energy in the real time market. Consequently, creating a new zone when the cause of intra-zonal congestion is local market power in the INC direction, as opposed to local market power in the DEC direction, can reduce market efficiency. This result is due in large part to the ISO's current local market power mitigation mechanism; it fails to recognize that, depending on system conditions, virtually any generation unit in the ISO control area can possess local market power in supplying incremental energy.

Importance of an Adequate LMPM Mechanism to New Zone Creation Decision

The above discussion emphasizes that the decision of whether to create a new zone depends on what LMPM mechanism is in place to deal with the local market power that exists with and without the new zone and whether the local market power is likely to be enhanced or reduced by the creation of a new zone. Under the current LMPM in California, creation of a new zone can enhance market efficiency if this new zone is a generation-rich area with few suppliers having seller's choice forward contracts. However, the creation of a new zone may also enhance the ability of suppliers on the INC side of transmission constraints to exercise local market power, in large part because of the ISO's currently inadequate LMPM mechanism, and therefore degrade market efficiency. Crucial to the conclusion about the impact of creating a new zone on market efficiency is whether LMPM is more effective in managing intra-zonal than inter-zonal congestion. This is a major shortcoming of the ISO's current LMPM mechanism because it can lead to a new zone creation decision that would be different from the one that would be made with a comprehensive LMPM mechanism designed to enhance overall market efficiency as outlined in the MSC's May 29, 2003, "Opinion on the Necessity of Effective Local Market Power Mitigation for a Workably Competitive Wholesale Market."

Conclusion

In deciding whether to create new zone, the ISO should focus on determining whether or not this new zone will enhance overall market efficiency. As discussed above, the basic competitiveness of the geographic area containing the new zone is largely unaffected by the creation of a new zone. A crucial input to the process of determining whether creating a new zone will enhance market efficiency is the form of the local market power mitigation available to the ISO with and without the new zone. This logic emphasizes one conclusion from the MSC opinion on "Managing Congestion Costs in the Miguel-Imperial Valley Region" concerning the need for a comprehensive LMPM mechanism for the current and future California market design. The use of locational marginal pricing (LMP) for congestion management does not eliminate the need for an effective local market power mitigation mechanism to guard against the exercise of local market power.