

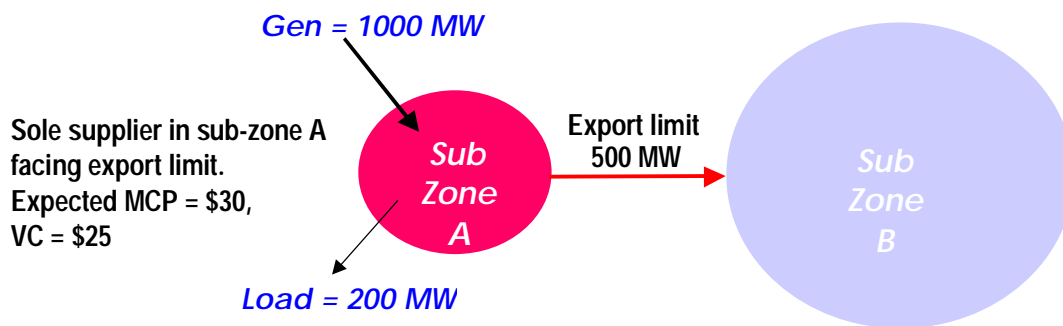
Opinion of the ISO Department of Market Analysis
on the Need for Alternatives to Economic Bids for Managing Intra-Zonal Congestion in the Absence of Competitive Conditions for Redispatch

December 20, 1999

Reliance on economic redispatch bids for Intra-zonal Congestion Management (AZCM) in circumstances where the market for such bids is not competitive provides gaming opportunities in situations where neither competitive bids nor resources under Reliability Must-Run (RMR) contracts are available for mitigating congestion. These opportunities are described below, as the “DEC Game” and the “INC Game.” They are not simply abstract possibilities. The ISO has experienced actual instances in which market participants have exploited these opportunities to exercise locational market power and earn windfall profits. The fundamental problem is that the ISO’s AZCM procedure, which features primary reliance on redispatch bids voluntarily submitted by Market Participants, requires that a competitive market exist for adjustments to resources to mitigate intra-zonal congestion. In reality, except for Path 26 (which will become an inter-zonal interface as of February 1, 2000), workably competitive markets for mitigating congestion on the intra-zonal interfaces where congestion has been observed to date do not exist. The Department of Market Analysis believes that these gaming opportunities need to be eliminated as soon as possible, and that the dispatch criteria and payment options proposed in Amendment 23 represent an effective means of doing so.

The DEC Game

A gaming potential exists in the AZCM decremental bid market that is exacerbated by the lack of workable competition. A generator with locational market power can schedule in the forward market so as to create intra-zonal congestion and then submit a highly negative decremental bid to alleviate it, thus making windfall profits if the ISO has no option but to accept its bid. The following example illustrates the DEC Game.



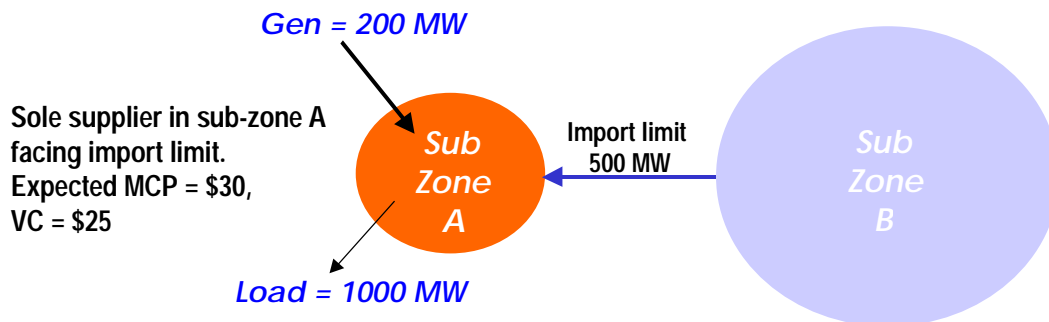
In this figure, the export limit out of sub-zone A is 500 MW, and the load in sub-zone A is 200 MW. The sole supplier in sub-zone A, aware of the export limit, can over-schedule (1000 MW) in the forward market to create intra-zonal congestion. Its variable cost is \$25/MWh, and the unconstrained market-clearing price (MCP) is \$30/MWh. To alleviate intra-zonal congestion, this supplier’s generation in sub-zone A must be decremented by 300 MW. In a competitive market, this supplier would submit a real-time decremental bid equal to its variable cost of \$25/MWh. It would then pay back $\$25 \times 300 = \$7,500$. Since it had received

$\$30 \times 300 = \$9,000$ for this portion of its schedule in the forward market, it would pocket the difference ($\$5/\text{MWh}$). In contrast, in a non-competitive situation this supplier could submit a decremental bid of $-\$750/\text{MWh}$, be paid not to generate because the ISO has no alternative way to mitigate the congestion, and would pocket a windfall profit of $\$234,000$ (at $\$780/\text{MWh}$, the total of its $\$30/\text{MWh}$ forward payment and its $\$750/\text{MWh}$ decremental payment) for the 300 MW decremental dispatch.

The DEC Game demonstrates the need to modify the payment rules for decremental dispatch when there is no competitive market to alleviate intra-zonal congestion. Clearly, the ISO should not be required to accept the decremental bid under such conditions. Nor would RMR offer an alternative. It is unlikely that an RMR unit would exist in a pocket with generation capacity far in excess of the local load, since RMR units are so designated to ensure an adequate level of generation to meet reliability needs, not for their ability to reduce supply. Nor would it be cost-effective to designate new RMR units for their ability to decrement output for AZCM, since the low frequency of intra-zonal congestion would not justify requiring consumers to bear the associated RMR capacity payments. The only viable approach in these situations, then, is to authorize the ISO to disregard the bid of the supplier in sub-zone A, issue a dispatch instruction to the unit to decrease its generation, and charge it based on some energy price that reflects the economic impact of following the DEC instruction. The energy price earned by the generator for its excess infeasible schedule ($\$30/\text{MWh}$ in this example) would be one logical choice for pricing the decremental dispatch. This would suggest using the forward zonal MCP as the decremental dispatch price for a unit that is a PX market participant. The DEC Game can, however, be played as easily in bilateral schedules. The real-time *ex post* price would therefore be an appropriate index, as it reflects a uniform price for all market participants in the relevant zone. Under Amendment No. 23, the supplier would have the choice of electing in advance to accept the real-time *ex post* price or the alternative pricing regime proposed by the ISO, which would adjust the *ex post* price-based charge to provide compensation in cases where the decremental dispatch entailed verifiable gas imbalance penalties to the supplier.

The INC Game

In the absence of a competitive market, a similar game may be played with incremental bids. A generator in a load pocket can under-schedule in the forward market so as to cause intra-zonal congestion, and submit very high incremental bids to alleviate it. The following example illustrates the INC Game.



In this figure, the import limit into sub-zone A is 500 MW, and the load in sub-zone A is 1000 MW. The sole supplier in sub-zone A, aware of the import limit, can under-schedule (at 200 MW) in the forward market to create intra-zonal congestion. Its variable cost is $\$25/\text{MWh}$, and

the unconstrained market-clearing price (MCP) is \$30/MWh. To alleviate intra-zonal congestion, this supplier's generation in sub-zone A must be incremented by 300 MW. In a non-competitive market, this supplier could bid \$750/MWh and pocket a windfall profit of \$217,500 for the 300 MW (at \$725/MWh) incremental dispatch, by foregoing only a \$1,500 forward market profit it would have earned by scheduling the additional 300 MW (at \$5/MWh) in the forward market. In a competitive market, in which this generator would have to bid its variable cost, this withholding game would not be profitable since the generator would be foregoing a \$5/MWh forward market profit, and would receive no offsetting profit in the real-time market.

The INC Game can be played in load pockets with insufficient generation capacity, where RMR contracts usually exist. The Amendment No. 23 proposal confirms that under such conditions, incremental bids to alleviate intra-zonal congestion would not be meaningful, and the RMR units would be called under the terms of their RMR contracts to alleviate congestion. Only in cases where effective RMR units were not available to mitigate the congestion would the ISO issue incremental dispatch instructions to non-RMR resources. In such instances the supplier would receive, depending on its prior election, either the real-time *ex post* price or an alternative payment based on market prices that cannot be affected by the supplier's exercise of locational market power plus specifically identified costs that the resource may incur in responding to the ISO's dispatch instruction.