

The Power to Direct in Wholesale Electricity Markets

Despite some problems, it makes sense to give an independent body the power to direct generator companies to make capacity available, especially if there is evidence that they have some degree of market power.

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In recent years a number of countries have embarked on a process of restructuring of their electricity supply industries. In countries like Chile, England, Norway, Singapore, New Zealand, parts of the United States, Argentina, and Australia, vertically integrated electricity supply utilities have been disaggregated and competition been introduced into the retail and generation segments.¹

In each of these countries there has been a general recognition that because of the special physical nature of electricity there needs to be a single system operator responsible for controlling the physical operation of a control area, coordinating generator schedules, balancing demand for

the supply of generation services flowing over the network in real time, and coordinating with neighboring control areas. There is much less agreement, however, about just how extensive the responsibilities of these system operators should be. Traditionally, the central operation of a network was conducted by the dominant vertically integrated utility in any region. In recent times in a number of countries, utilities have been compelled to turn over the operation of their transmission systems to independent system operators (ISOs). These ISOs are usually a non-profit organization with an independent board of directors and are responsible for all network functions over a geographic area.

The reliance on ISOs to operate the central dispatch of electricity raises all types of governance issues. As Joskow (2000b) has pointed out, these include:

Can the ownership of the transmission assets be completely separated from the use of these assets without distorting operating and investment decisions? Should the ISO be public or private? Should it be a separate company or a cooperative controlled by suppliers and customers? How is the ISO's board of directors elected, who does it represent, and what are the voting rules? How is the ISO's management selected, what objectives is it given, and how are good performance incentives provided to the management? How should the ISO be regulated?²

One issue relates to the potential for generator companies to abuse their market power. Some commentators have argued that even in disaggregated generator markets the special characteristics of electricity supply create conditions of market power.³ The question of whether generator companies have the capacity to exploit market power is an important one, as it is central to making a judgment about whether government agencies or the system operator should directly intervene in order to alter the operations of wholesale electricity markets.

In some places the system operator has the power to intervene in the wholesale electricity market to direct generator companies to make available generation capacity if it feels that this is necessary to guarantee the security of supply and if it feels

that generator companies are withdrawing units in order to manipulate their market power. In these cases the system operator is normally an organization independent of market participants such as the generators, retailers, and lines companies. One example of an ISO that has this responsibility is the operator of the Australian National Electricity Market, the National Electricity Market Management

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Company (NEMMCO); in the summer of 2000–2001, it used it to direct a major unit owned by Loy Yang Power in the State of Victoria.⁴ This unit was the largest in Victoria and made up a significant part of the industry's capacity in the sub-market of Victoria. This direction took place on a day of hot temperatures and consequently high demand, and without it reserves in the Victorian sub-market would have fallen to levels that would have put the security of supply at risk.

In the wholesale electricity market, market power is derived from the inelastic nature of demand and supply during peri-

ods of peak demand. During any day wholesale electricity prices fluctuate along with changes in demand for electricity. These wholesale prices are, however, not reflected in the rates paid by retail customers as most pay a flat rate that reflects the average cost over a month or a quarter, their meters being designed to determine only the amount used rather than the time used. Electricity demand is therefore very insensitive to changes in price in the short term. On the supply side at times of peak demand, where every generator company is operating at its absolute production limit, the price elasticity of supply is also insensitive as the generators reach capacity constraints. As electricity demand and supply need to be matched instantaneously, and as electricity cannot be stored, this means that during these periods the elasticity of supply becomes very insensitive.

At times of strong demand where capacity is being fully (or close to fully) utilized, a firm that threatens to withdraw generator units from the market can raise market prices substantially. In these circumstances, the generators that hold back part of their supply would not face the threat of being undercut as competing generators would be fully utilizing their plant. Furthermore, the resultant increase in prices would be substantial given the unresponsiveness of demand to changes in price.

During periods of peak demand if the system only has a

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