1. Removing barriers to cross-border trading

i. Congestion management – issues, opinions and solutions

This quarter's energy trends survey shows that congestion management is regarded as one of the most important issues facing energy markets today (see page 16). Cross-border power flows are an integral part of a single energy market, but congestion at certain key points of the European network is hindering development.

The free flow of power across borders is essential to promote a genuinely integrated energy market in Europe. Even though markets are in the process of being liberalised in line with EU directives, inadequate and congested interconnections mean that some generators are able to retain market power in their home markets, obstructing new entrants. A significant amount of transmission capacity remains on long-term contracts, especially in areas where the market price differences at the borders are highest, for example at the Italian border.

The European Commission wants to see market-based methods introduced into congestion management as soon as possible, enabling an economic value to be placed on the product being traded, i.e. transmission capacity. Non-market based methods work where there is no competition, but if there is to be a fully functioning competitive market, cross-border exchanges will clearly have to be managed under market rules.

The power of the incumbents was often cited by respondents to the survey as a major barrier to effective congestion management – the formulation of a transparent and coordinated system of congestion management in the EU could help to mitigate market power in many national markets.

A strong transmission system and adequate interconnector capacity between regions and between countries would enable generators to compete directly against each other, thereby providing an effective basis for a competitive market.

Congestion has the effect of fragmenting markets into smaller zones – the opposite of the integrated market for which the EU is striving. Congestion can also vary over time and place, changing both the size of the relevant market and the problem of market power from moment to moment and place to place, and making resolution of the problem more difficult.

Congestion management methods

Of the most congested interconnectors in Europe, 12 are managed by market-based methods, and 14 interconnectors have a joint method agreed between the TSOs or regulators concerned. The latter mostly involve either a 50/50 split of the capacity, capacity obtained from the TSOs, or the unilateral allocation of capacity.

Table 1 shows the main current methods of congestion management used for the major interconnections in Europe.

Table 1. Congestion management methods in Western Europe

Method	Involved interconnections
Priority list	Austria – Germany Austria – Switzerland France – Belgium France – Germany France – Spain France – Switzerland
Pro-rata	Austria – Italy France – Belgium France – Germany France – Italy France – Spain France – Switzerland Italy – Greece Italy – Switzerland
Explicit auctions	Belgium – Netherlands Denmark – Germany France – UK Germany – Netherlands Greece – Italy
Market splitting	All interconnections within the Nordic region
No allocation mechanism	Austria – Switzerland Germany – Austria Germany – Switzerland Germany – France

Source: ETSO

Priority list management is conducted according to the 'first-come-first-served' principle, where the marketer obtains capacity in a priority order until the whole of the available transmission capacity (ATC) is allocated. Pro-rata rationing is where capacity is allocated in proportion to requests if they exceed the announced ATC.

Market-based methods

Market-based methods are essentially market splitting, auctions and counter-trading or re-dispatch. In the Nordel region, transmission capacity is already allocated implicitly by dividing the energy market into price zones (market splitting), while there are explicit auctions on the UK/France interconnector and the Dutch/Belgian and Dutch/German borders.

In explicit auctions, only the transmission product (MW) between the two areas is traded, while implicit auctions are where both the energy (MWh) and the corresponding transmission product (MW) between bidding/price areas are traded simultaneously and are coupled. This allows transmission capacity to be allocated according to energy trading requirements.

However, one major disadvantage of explicit auctions is that they do not allow the netting of imports and exports, a requirement of the EC Regulation on Cross-border Exchanges (1228/2003), in contrast to implicit auctions, where this is possible. Explicit auctions could also lead to a fragmented European market, whereas implicit auctions could allow the creation of a single, integrated market. However, developing the process of implicit auctions will take some time, as they would require the existence of sufficient power exchanges to handle imports and exports through the spot market.

An implicit auction requires a power in both the importing and exporting areas. A number of power exchanges have already been created in different markets and future implicit auctions of transmission capacity could provide an interesting commercial opportunity for the power exchanges, if they can develop sufficiently attractive tradable products.

A third option, that of counter-trading or the re-dispatch of capacity by TSOs to alleviate congestion between bidding areas, is also under consideration, but this could be expensive.

Need for a clearer set of rules

Many respondents to the survey believed that the European Commission has a major role to play in formulating a solution to congestion management by establishing a clear framework of rules. The EC has been active in trying to resolve the situation, and the above-mentioned EC Regulation of June 2003, which came into force on 1 July 2004, addressed this issue directly. This declared that congestion management should be non-discriminatory, market-based and preferably non-transaction based. The regulation also stated that day ahead transmission capacity could be allocated either by explicit auctions, or preferably by implicit auctions.

Although the Regulation has laid the basis for resolving congestion problems on the European grid system, the details of how to do this remain to be resolved. The current situation in which different methods are used to resolve congestion difficulties is clearly no longer tenable in a single energy market, and the search is on for a coordinated approach.

A report by consultants Consentec and Frontier Economics, commissioned by the EC and published in June 2004, concluded that there is no one single optimal solution for congestion management in the EU, but that further consideration should be given to two options:

1. A hybrid of implicit and explicit auctions
2. A mechanism of purely explicit auctions

A combination of explicit auctions for long-term physical capacity rights and implicit auctions may be the most likely choice, but the conclusions of the report are still under consideration.

Working towards a solution

Work on finding an acceptable solution is also progressing within other organisations. ETSO (European Transmission System Operators) is heavily involved in finding a coordinated method of congestion management, and is working closely with others within the EU's Florence Regulatory Forum and bilaterally with other interested parties, including EuroPEX, the Association of European Power Exchanges. ETSO and EuroPEX have established a Joint Working Group to look at the issue and produce further proposals.

In an interim report published in September 2004, the working group recommended Flow-based Market Coupling (FMC) as a possible solution to cross-border congestion. This incorporates flow-based modelling to maximise the inter-regional transmission capacity that can be made available without compromising system security, and market coupling to enable competition across regions, subject to available transmission capacity. This approach was supported at the last Florence Forum in September 2004, with the Commission setting up a number of regional mini fora to develop implementation plans, with FMC as their 'point of departure'.

Working towards a solution (contd)

It will be some time before a coordinated method of congestion management acceptable to all can be achieved. The uncertainties associated with this were underlined by the widely differing views of members of the panel on when there would be a credible, integrated system of congestion management in Europe. Opinions ranged from a minimum of 3 years to over 10 years in some cases.

Some regional initiatives are already underway. Poland, the Czech Republic and Germany, for example, recently staged a joint auction for transmission capacity, and this initiative could be followed by others.

A project is also well advanced to establish a Belgian power exchange, Belpex, that will from the start be coupled to both France and the Netherlands using an approach based on the ETSO/EuroPEX work.

Once an approach has been agreed, the practicalities of establishing a co-ordinated system of congestion management will have to be addressed, including a timetable for the introduction of the new system across Europe. ■

This article was researched and written by Moffatt Associates, an independent research and energy market consultancy based in London.

For further information on congestion management, please contact:
Andrew Claxton, Executive Director, International Development at APX Group on +44 (0)20 7841 5636 or a.claxton@apxgroup.com