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## **Position Paper on Congestion Management**

**Florence Forum, May 7<sup>th</sup> & 8<sup>th</sup>, 2001**

## Executive summary:

- *ETSO has developed improved and harmonised definitions of cross-border capacities. It recommends that Regulators should adopt these definitions, which bring greater transparency and easier use by market participants.*
- *In the many European areas where networks are highly meshed, crude allocation mechanisms that do not take into account the real network structure cannot maximise trade possibilities, and require greater margins to avoid jeopardising power system security. This deficiency can be addressed by co-ordinated auctioning based on physical path management. This could be a significant step forward, and experimental implementations should be considered.*
- *“Market splitting” has been operated successfully in Scandinavia for 10 years. Nevertheless, it does not take into account network interactions between areas in a way that could also be used in a number of highly meshed Continental Europe regions. Its advantages and drawbacks when applied to continental Europe should be carefully analysed by TSOs in specific regions and of course by the involved market participants.*

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Since the last Florence Forum in November 2000, ETSO has published a set of documents, which should help to progress sound debates on the very complex topic of congestion management.

Congestion management has a strong impact on both power system security and market liquidity. Therefore it is discussed at the same time by technical experts who do not necessarily share the economic language of other parties, and by market participants who often are not aware of the specific constraints of the electrical power system. The first ETSO document published for this Forum, **“Key Concepts and Definitions for Transmission Access Products”** aims at bringing some sharing of the basic vocabulary and basic concepts. It describes the main characteristics of the “transmission products” which are delivered by TSOs. Those fundamentals are necessary to understand the advantages and drawbacks of the different possible congestion management schemes, both in terms of system security and in terms of trade liquidity.

This first document briefly discusses the importance of the “path model”. Up to now, most trade arrangements have been based on the “contract path” concept, where electricity is supposed to flow according to the chosen trading arrangements. This concept has been acceptable as long as it has been applied to long term steady transactions between integrated companies. Now it has severe drawbacks. At least it prevents taking maximum benefit from existing transmission facilities in meshed networks. At most it can severely jeopardise power system security (e.g. the chaining contracts without visibility, that have been made possible thanks to the contract path paradigm, have been the origin of several very dangerous operational situations due to unexpected flows through Belgium). Moving to the “physical path” concept while keeping the complexity of managing physical flows out of the market itself is a major challenge for the next years.

**Co-ordinated auctioning**, which was the theme of a preliminary presentation to the Florence Forum in November 2000, is the topic of the second ETSO document. It is a flexible market-based solution for allocating transmission capacities, and is a candidate method for moving to “physical path” management. Co-ordinated auctioning uses a real network representation, and takes advantage of it to

handle adequately the problem of allocating scarce transmission capacity in meshed networks; at the same time it relieves traders from the complexity of getting access separately on neighbouring bottlenecks. It has no incompatibility with any form of market structure (bilateral contracts, PXs...). Its implementation requires a high level of co-operation and co-ordination among TSOs (and their Regulating bodies), and an experimental operation has still to be worked out. Nevertheless, co-ordinated auctioning seems to be a valuable alternative to market splitting, with the advantage of taking into account the interdependencies due to meshed networks.

Market splitting, market coupling<sup>1</sup>, or **‘Co-ordinated Use of Power Exchanges for Congestion Management’**, is addressed in the third ETSO document. This paper shows that using PXs for organising trade between congested areas is a very interesting principle. It has been functioning well within the Nordic area for 10 years, but it has severe requirements that have to be addressed before considering implementation outside Nordel. For example, the Nordic market splitting system is based on the ability for TSOs to calculate inter-area transmission capacities. In Continental Europe, such pre-calculations of bilateral area-to-area capacities cannot take into account heavy interactions between meshed areas. Nevertheless, the developments towards the physical path paradigm that have been studied in the framework of co-ordinated auctioning could also be applicable to the improvement of PX-based congestion management methods. The next step in ETSO analysis will thus be to try to adapt “market splitting” principles to match the complexity of continental Europe networks .

It must be emphasised, however, that the "Co-ordinated Use of Power Exchanges for Congestion management" is mainly a spot-market tool that cannot, on its own, cope with the capacity allocation problem in the presence of bilateral contracts. Congestion problems related to cross-border bilateral contracts can be handled by a capacity co-ordinated auctioning.

The last ETSO document is a follow-up of the last Florence Forum. **‘Definitions of Transfer Capacities in Liberalised Electricity Market’** aims at harmonising all definitions related to inter-area transmission capacities. The new definitions improve a set of different notions related to cross-border capacities. They clearly separate issues related to electricity exchange programs (a trade concept) from issues related to physical flows. They also take into account the different time periods for capacity allocation. This document provides greater transparency in a complex technical field. Nevertheless, in meshed networks, the concept of inter-area capacity suffers several strong limitations, linked for example to the interdependencies between the different areas. Thus ETSO promotes the publication of capacity values in order to improve transparency in the current market conditions, but highlights the fact that pre-calculated bilateral inter-area capacities are implicitly based on a “transaction based” and “contract path” approach of cross-border trade. ETSO will continue to develop in this area by editing detailed calculation procedures that should be adopted by Regulating Authorities.

As a conclusion, it should be pointed out once more that no method for congestion management is universally superior to others. Today, the physical realities are subject to many simplifications, with a clear trend to more and more sophistication handled by TSOs. The transmission products delivered to market participants are simplified to allow market liquidity. Thus they are quite disconnected from the electrical reality of power systems, and TSOs need more and more tools for reconciliation between trade and actual power flows. A good balance will have to be found in the future between the sophistication of transmission products developed for market participants, and the sophistication of the

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<sup>1</sup> “Market splitting” is the expression used in Scandinavia, where a single market is “split” in case of congestion. In continental Europe, it is very unlikely that in a foreseeable future a single administered market can create similar conditions. Thus “market splitting” often means the co-ordinated use of PXs where several different neighbouring markets are operated separately before congestion; “market coupling” could be a more appropriate expression for such a congestion management scheme.

tools used by TSOs to keep grid access simple even in the highly complex continental Europe network.

**The four above-mentioned papers on congestion management issues can be downloaded in pdf format from ETSO's web site:**

<http://www.ets-net.org> (see "Public Documents")