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<%@LANGUAGE="VBSCRIPT"%> <% Dim Recordset1 Dim Recordset1_numRows Set Recordset1 =
Server.CreateObject("ADODB.Recordset") Recordset1.ActiveConnection = MM_ifiec_STRING
Recordset1.Source = "SELECT * FROM electricity ORDER BY volgorde DESC"
Recordset1.CursorType = 0 Recordset1.CursorLocation = 2 Recordset1.LockType = 1 Recordset1.Open()
Recordset1_numRows = 0 %>
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INTERNATIONAL FEDERATION OF INDUSTRIAL ENERGY CONSUMERS

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IFIEC Europe

Documents- Electricity

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Internal Market of Electricity

A “Dynamic Toolbox” approach to cross border capacity allocation and congestion management Working document

1. Basic principles

Cross-border congestion management and capacity allocation methods are determinant for ensuring fair and non-discriminatory access to the European electricity network and achieving a competitive Single Electricity Market.

Critical factors for the successful management of cross-border capacities include:

- avoiding congestion through optimal use of the existing infrastructures and through increasing capacity where necessary,
- obligation for unbundled TSO’s (Transmission System Operators) to co-operate under the scrutiny of CEER (Council of European Energy Regulators),
- absence of market abuse and gaming,
- transparency of real-time information concerning network capacity availability,
- fair and non-discriminatory treatment for all network users.

Given the current “imperfect” market conditions, IFIEC Europe favours a “**Dynamic Toolbox**” approach to manage cross-border congestions, whereby a mix of techniques is permanently adapted to different and changing local control area conditions.

The “**Dynamic Toolbox**” contains three basic types of measures:

A) Soft measures: deal with organisation, calculations and information (paragraph 3.2)

B) Allocation measures: are based mainly on the following current practices : Rationing,

Market-splitting, Re-dispatching and Auctioning.

A complementary method is also under investigation: “Coordinated Cost Plus” (paragraph 3.3)

C) Timely structural measures (paragraph 3.4)

From the industrial energy consumer’s point of view

- **The primary features of any cross-border allocation and congestion management scheme must be simplicity, transparency, maximum use of transmission capacity and low cost.**
- **All revenues received by TSO’s in connection with congestion management and capacity allocation measures must be subject to regulatory scrutiny. The funds must be exclusively used to reduce congestions.**

2. Need for Cross border trade

The creation of a Common European Market for electricity and the effective implementation of the Electricity Directive 96/92EC strongly increase the importance of cross border trade. In certain countries with dominant incumbent suppliers, imported power provides the only real source of competition.

In addition, the increasing importance of security of supply, in terms of system security and diversified energy sources within Europe, is giving extra need to the coordinated management and development of the cross-border infrastructures.

A large portion of the interconnector capacity is still tied to long term “historical” contracts concluded between a limited number of vertically-integrated electricity companies. While this practice may have been well-suited to historical monopoly conditions when interconnectors were not primarily designed for significant cross-border trading, the terms of these contracts should be reviewed to ensure that interconnector capacity is allocated in a non-discriminatory and transparent manner compatible with the perspectives of increased cross-border trade throughout the European Union.

2.1 Driver for cross border trade (CBT)

In an open electricity market, the main driver for CBT is a difference in commodity prices.

This price-differential can be very complex, according to:

the time of the year: summer versus winter,

the hydro conditions: Austria, for example, can be a net importer or net exporter of power,

the type of product offered: base load – peak – balancing – green electricity.

If the total transaction cost is high, as compared to the market-price differential, cross border trade will stop, thereby decreasing liquidity in some markets with high market concentration.

3. Types of congestion

In an open market with cross-border transaction costs that are low, as compared to the market

price differential, and where relatively limited cross-border capacity exists, most capacity will become congested: demand will be larger than offer. Congestion can therefore be described as an imbalance between the demand (driven by the price differential) and the available cross-border capacity.

Different types of congestion may occur:

- Continuous: the basic driver is the continuous high difference in market prices
- Time dependent: e.g. only during peak hours
- Sporadic: special events, trip of an interconnector, holidays, dry season
- Mono- or bi-directional: based on physical flows after netting of all transactions

Factors that have an impact on the long-term evolution of continuous congestion are:

- Evolution of the price differential between control areas: fuel prices and fuel mix, evolution of supply and demand, subsidies for green electricity
- Evolution of CBT capacity: either by soft financial or structural measures.

3.1 The “imperfect” market

In an open market, based on economic efficiency, all congestion management solutions should theoretically be based on an ideal solution, such as market splitting.

However, the internal electricity market is today far from perfect:

- Some TSO’s are not yet fully unbundled.
- There is still a tendency towards discriminatory TSO behaviour in some control areas.
- Co-operation between the TSO’s (eventually via ETSO) is still in the maturing phase (e.g. a large number of TSO’s (32), countries (15+), and grid users).
- Some large generators/traders may have a dominant position on both sides of a border.
- In some countries, there is still not a power exchange or even a market price.

As the market is likely to remain far from perfect in the foreseeable future, congestion management solutions will necessarily have to be adapted to fit specific situations, on a case by case basis. This will involve co-ordination between two or more TSO’s, as well as multiple-border solutions.

When/if the congested situation improves, appropriate measures adapted to the new situation should be taken, which is the essence of the “dynamic toolbox approach”.

IFIEC Europe insists, in particular, that all income that TSO’s receive from congestion management must be used in a transparent way to improve cross-border trade (redispatching costs, grid enhancement and infrastructure investments, etc), and not as profit for TSO’s. Neither should such income be used as implicit subsidies for other parts of the grid operation.

3.2 Congestion management - Soft measures

So-called “soft measures” can have a potentially high impact on reducing short-term congestions at low cost:

- Co-operation between TSO’s, maximal exchange of information, optimal timing of allocation and scheduling operations,
- Transparency: publication of market-related information (Nordpool: outages, historical

- data) to all grid users and market participants,
- More adequate calculation of Net Transfer Capacities (NTC) and line loading: i.e. between Germany and Netherlands an extra 1.000 MW would be available by adjusting thermal limits,
 - Allocation of “interruptible capacities”, in addition to the “firm” ones¹,
 - Enhancement of existing infrastructure equipment.

Synchronisation and optimisation of the timing of scheduling and allocation seems to be a “sine qua non” condition for the successful implementation of soft measures. Soft measures should take precedence over other allocation mechanisms in managing congestion.

3.3 Congestion Management – Allocation measures

There are 5 well-known allocation methods practiced today by TSO’s to manage congestion :

- Rationing (pro-rata)
- Auctioning
- Market splitting
- Re-dispatching
- First come/first served

¹ the firm ones based on TSO security criteria “n-1” for cross-border capacities in order to ensure grid safety; the interruptible ones, based on the available marginal capacity according to TSO security criteria between “n-1” and “n”, with the aim of optimising the full use of cross-border capacities

In addition to the above practices, a complementary method is currently under investigation for immediate application in certain congested zones with high-density flows, the so-called “**co-ordinated cost plus**” method.

Some of the major short-comings experienced with local allocation methods, from border to border, are:

- Their lack of correlation with the physical electricity flows makes them ill-adapted for optimising grid management in the short term and solving congestions in the long term.
- The lack of control over the flows leads to a sharp reduction in the available capacity to be allocated.
- During transfers through one or more countries, it is difficult, if not impossible, to know at which borders capacity is booked and how to obtain guarantees for capacity all along the way, in particular where the allocations are not simultaneous.

IFIEC prefers cost-efficient solutions that are non-transaction based.

Rationing

Rationing is beneficial for end-consumers if no fair market-based solutions are available. However, this should be a temporary solution, only in absence of a functional market. This method provides no price-signal, the TSO has no income, and there is discrimination between the users of the grid.

Examples of conditions where rationing could be an effective option are:

TSO's are not unbundled and/or are not co-operating,
parties hold dominant positions on one or both sides of the border,
very high price differentials and very limited CBT capacities.

Rationing seems a very good, but temporary method for kick-starting competition on some markets (comparable to capacity-release mechanisms).

Rationing seems preferable when market differential is very high: congestion is permanent and netting is exceptional. It is applied today at the France-Italy border, and could be used at the France-Belgium border.

Auctioning

This method of explicit auctioning appears simple and easy to implement, since it involves a minimum input from TSO's: All input comes from the market-players, mainly the generators and traders. Nonetheless, a near-perfect electricity market is required in order to obtain satisfactory results. As mentioned above, ideal market conditions are not expected for some time to come.

In the meantime, auctioning is likely to encourage market abuse by dominant players: if generators or traders have large market share on both sides of a border, they have a strategic advantage against new entrants via gaming tactics and, lack of transparency.

In case of high market differentials, additional pro-active anti-gaming rules and maximum transparency must be provided; exclusion of dominant parties, or limits on maximum allocation per user.

To date, IFIEC Europe is unaware of any positive experience, from an industrial energy consumer point of view, where capacity auctions have been introduced for electricity (or gas) networks. Among the major disadvantages are:

- A tendency to increase the price: the yearly auction from Germany to the Netherlands in 2002 for instance resulted in prices of 18 EUR/MWh. If auctioning on a yearly base is applied, the volume is much larger and price uncertainty also increases. This extra risk-premium will influence strongly the price of a long-term auction. This risk may not be the same for all grid-users: new entrant – consumer – large generator.
- The difference between true cost of electricity transmission and auction price. Contributing factors could be risk management and the degree (or lack) of synchronisation between energy and transport auctions.
- Political outcomes : i.e. export and import of “green electricity” generates high auction prices due to differences in legislation.
- A transactional cost if the capacity is allocated to an end-user.

In addition, as auctioning does not require a power exchange, it will therefore not stimulate the mature development of a liquid power market in Europe. As of today most TSOs are not obliged to spend the additional income from auctions on measures to extend the available capacity for cross-border trade. This creates a strong incentive to maintain existing bottlenecks in order to maximise income from auctions.

Auctioning with a limited number of large or even dominant players (on one or even both sides of the border), and without minimal transparency and minimal liquidity of the electricity markets at both sides of the borders, will always have a tendency to maximise the prices and

to minimise capacity, which kills competition by import. IFIEC Europe therefore confirms its strong opposition to the extended use of auction mechanisms to allocate capacity of cross border transmission lines.

Market splitting

Market Splitting, which is based on market prices and well-defined cross-border capacities :

- hampers the conclusion of bilateral contracts without go-between (coverage),
- does not prevent congestions from producing high prices (e.g.: Spain – OMEL),
- allocates the available capacity at a significant price (difference between market prices).

On the other hand Market Splitting seems an efficient method with maximal transparency and pricing signals, but some conditions must be met:

- active co-operation between TSO's on both sides of the border,
- spot-markets on both sides of the border,
- a limited market concentration within each control area as well as globally.

It is not clear how the NTC values will be affected by market splitting: either a low conservative NTC is used in the start-up phase, or the NTC's can be optimised as the TSO's gradually improve co-ordination (optimal load flow calculations).

The situations at the borders of the Netherlands-Germany and Denmark-Germany fulfil all above conditions, and could be an interesting test case to introduce market splitting within EU. The integration of APX into Tennet is already an important step towards the Nordpool structure.

As concerns time and risk-premium: market-splitting operates on a day-ahead basis, which means that all grid users have an acceptable level of information and risk. Risk can be defined as a function of volume x time x price uncertainty.

Re-dispatching

This method is considered to deal effectively with any capacity allocation and to optimise congestion management at minimum cost. It is used frequently by TSO's to optimise the 'internal' operation of their grid within their control area. In a co-ordinated way it can also be used between TSO's (i.e. between Spain and France). Re-dispatching can be very efficient at some borders. However, TSO's do not always integrate these methods in their congestion management.

It's an efficient and market-based solution.

As concerns re-dispatching costs:

- in case the market is dominated by a 'local' generator, the cost of re-dispatching should be cost-based, not market-based;
- in case of effective "open" markets, the cost of re-dispatching could be based on market-based prices.

Re-dispatching is preferable in situations where market price differential is low: Congestion is sporadic and netting is possible. In this case, additional capacity can be allocated at

minimum cost and frequency.

The question arises whether re-dispatching should be based on (regulated) costs or on market prices and whether associated costs should be transaction-based or integrated into the general grid prices “G” and “L” paid by the users of the grid.

For example, if re-dispatching is applied in a co-ordinated way within liquid markets with market-based supply curves, the result is almost similar to that of market-splitting. In this case, re-dispatching should be considered as market and non-transaction-based.

Co-ordinated Cost Plus

A complementary congestion management tool currently under investigation for immediate testing at the Belgium/France border is the so-called “**co-ordinated cost plus**” method which :

- handles unlimited “virtual cross-border capacities”, complementing the physical capacities with co-ordinated re-dispatching,
- absorbs short-term congestion by co-ordinated re-dispatching and long-term ones by optimised investments,
- allocates cross-border capacity between any pair of zones, without pancaking, at any moment, for a wide range of shorter and longer term power purchases abroad (one or several days, weeks, year),
- allocates cross-border capacity at firm prices, equal to the reserved power multiplied by the “congestion cost” between the two nodes, according to the tariff in force the day of the reservation; this periodically up-dated tariff reflects the calculated costs (through investment or re-dispatching) with regard to the flux prevision,
- allocates two types of capacities: for firm power, with guaranteed transit, and for interruptible power, where transit could be limited by remote control in case of an incident leading to the loss of lines.

More generally, this method :

- allocates interconnection capacity according to the strict absorption cost of the associated possible congestion (no cost as long as there is no congestion),
- optimises the use of interconnections in real time, by considering physical fluxes, by eliminating occasional capacity restrictions and by avoiding any pre-assigned allotment of shorter term and longer term capacities,
- uses all income to reduce congestion of international lines,
- ensures grid system security, taking into account, for example, safety margins for dynamic power flows,
- furnishes transparent “market” indicators of congestions and of absorption costs, while the physical capacity is allocated on a free basis,
- Is not transaction-based.

First-come/first-served

The method of “First come/first served” (FCFS) exists today on some borders (with ‘old’ long-term contracts), but is not further discussed in this document. This method is generally not acceptable because of existing or potential discrimination among grid users.

3.4 Timely structural measures

As structural measures that include investment decisions to extend cross-border capacities IFIEC Europe suggests the following:

- Low-cost optimised investments for de-bottlenecking,
- **Infrastructure development:** In order to address structural, long-term congestion, IFIEC Europe recommends that construction of new interconnections and development of FACTS (Flexible Alternating Current Transmission System) be elaborated and undertaken as soon as possible.

<% Recordset1.Close() Set Recordset1 = Nothing %>