

## **Opportunities for TSOs and Regulators to maximise the allocation of cross border transmission capacity for competitive wholesale power transactions in Central and Southern Europe, including Switzerland**

### 1. Current NTC calculation methods create inefficiencies, to the detriment of well functioning European and Swiss energy markets

EFET believes that a crucial role of TSOs in a liberalized energy market is to provide a level playing field for access to transmission capacity. In a European context this means they incur a duty to maximize the availability of capacity between countries or control zones, with a view to facilitating the creation of a single European energy market.

A critical factor in cross border transmission capacity allocation today' is the distorted calculation by TSOs of cross border Net Transfer Capacity (NTC). A calculation of NTC values based only on a subset of available data leads to reduced capacity allocation and hinders the efficient use of cross border transmission capacity by wholesale power market participants. Such a hindrance to the functioning of the wholesale market across national frontiers is ultimately detrimental also to competition and efficiency at the retail electricity supply level within individual EU Member States. The same applies to the liberalising Swiss energy market to an increasing extent.

NTC values (published in each direction for the totality of the interconnections at any one border) are established by TSOs as the result of their deducting from estimated Total Transfer Capacity (TTC) a Transmission Reliability Margin (TRM). Thus TSOs reduce usable capacity for whatever they consider to be valid security and contingency reasons. The language used by ETSO to describe the judgement TSOs should apply in reducing the TTC by the TRM bears some reflection: ETSO guidelines explain NTC as the capacity expected to be usable by market participants "...under foreseen simultaneous flow conditions, at the n-1 security level, subject to deductions for TSO system balancing purposes and to adjustments for abnormal national network conditions." It is also worth noting in passing that many NTC values are still set at a constant level for every day and every hour within a six month period, rather than being dynamically adapted to the actual mid or short term grid security situation (taking account of network topology, outage of power plants, load variations or wind generation predictions.).

Today's best known short term alternative to use of NTC values for each border would be a flow based calculation (which may be supplemented even by flow based allocation). A flow based methodology is under serious examination in a large part of central western and central east Europe already, at least for D-2 and D-1 estimations, though it has not been implemented anywhere yet. We would expect TSOs to adopt a Power Transfer Distribution Factors model (PTDF), complemented by full netting of anticipated flows, when performing any such flow based calculations and/or allocation.

But traders have no realistic hopes for the immediate introduction of a PTDF model in regions of Europe where market coupling discussions are not already at an advanced stage. In the absence of its

introduction, accurate, transparent, objective and coordinated TRM calculation methods, resulting in less restrictive and rigid NTC values, remain of utmost importance to the energy trading community. If some TSOs still persist in an ultra-conservative and non-dynamic approach to setting NTC, by reason of an application of unduly cautious assumptions about outages or abnormal flows, when establishing a TRM, efficient cross border electricity price signals will remain a vain hope, rather than a realistic goal. We acknowledge the added difficulty for TSOs, at the borders of Germany and at the Northern border of Switzerland, of dealing with unpredictable flows through Germany, attributable to the impact of arrangements for dispatching extra wind turbine generation. However, we insist that these factors alone cannot justify inaction when it comes to reform of the setting of cross-border capacity values overall.

## 2. No existing incentives for TSOs – neither to maximize NTC, nor to guarantee an efficient usage of cross border capacities

The European transportation grid is a deeply meshed network and even underlying limitations (e.g. in the 110-kV network) may cause congestions on the international transportation layer. It represents an infrastructure technically integrated both horizontally (to neighbouring grid operators) and vertically (to lower voltage levels). Encouraged to do so by national regulators, most national system operators in Europe maintain an interest only in reducing their own costs and do not face any commercial imperative to maximize NTC between countries in favour of a common European market for electricity. Indeed some do not even face any regulatory imperative to do so yet. The marginal efforts to enlarge cross border capacities thus partly reflect the fact, that TSOs are not given any incentive to maximize NTC (or even to replace the NTC methodology quickly by a more liberal flow-based approach). We recommend that Regulators should address urgently this absence of incentives.

Moreover it would be easy for European TSOs to offer more realistic long term and mid term NTC by using a re-dispatch methodology, wherever there is a lack of transmission capacity in certain hours only. EFET cannot understand why this scheme is not already used, not even in cases of two liquid markets on both sides of a congested border nor of two national markets having compatible balancing arrangements in place. This methodology would increase capacity revenues and usable transmission capacity (NTC) at the same time. This approach can be adopted immediately without any modification of existing calculation rules.

## 3. The NTC calculations and scenario exchanges used by different TSOs do not reflect a unique and consistent methodology for a common European market in electricity

EFET member companies have observed that at nearly all regularly congested borders in the UCTE area TSOs persistently underestimate the potential for expanding NTC values. Reasons why TSOs may do this include:

1. Inaccessibility of accurate information about expected flows in other TSO grid areas
2. Failure to net predictable counter-flows against a dominant flow
3. Inaccurate or unduly conservative calculation of expected counter- and loop flows
4. Lack of co-ordination of nomination and scheduling periods and procedures
5. Non-provision of appropriate economic incentives (including through regulatory regime) to avoid declaring congestion at borders (as noted in the preceding section 2 of this paper)
6. Over-cautious withholding of capacity within a control area on one side of an interconnection, because of managing system security or balancing eventualities (mutual operation would diminish total margin requirements)
7. Unwillingness to co-operate for the purpose of coordinating re-dispatch of generation plant, even where this might contribute to a cost efficient elimination or reduction of congestion across a border between their control areas

Over the last few years, European wholesale power market participants in fact faced not just a freeze but actually a remarkable reduction of Net Transfer Capacities (NTC) at several borders. This has occurred not only as between relatively illiquid electricity markets in east European countries but also at the richly interconnected borders surrounding Switzerland. We note only one exception, attributable to the commissioning of a new overhead line on the Berlina axis. But even in this case, where normally there is a simple dominant southbound load flow to Italy, we did not observe much positive impact of the additional physical capacity on NTC values to and from Italy.

To our knowledge the involved TSOs on each side of the Swiss borders still only exchange limited base case scenarios on the basis of direct neighbour data, and they only allow commercial programmes based on the most conservative estimation in those scenarios. We do understand that TSOs must determine initially on a unilateral or bilateral basis their NTC 'reference base case calculations'. But it is increasingly obvious that in the most meshed area of the Europe-wide network, subject to open access, the independent and uncoordinated elaboration of base case scenarios no longer makes sense.

#### 4. Sharing of data by TSOs, transparency and the construction of a common base case scenario

We suggest that UCTE or ETSO could take the lead and create a common database, describing consistently use of the real physical network across all parts of the European system. This database would be fed and updated regularly by TSOs, allowing them to calculate more precisely than today the cross influence of changes in generation and load profiles, cross-border transactions and network conditions on physical power flows.

TSOs themselves and consumers will be the first beneficiaries of such enhanced data sharing, because it will contribute to security of supply. The database could offer TSOs more confidence in their own security assessments and render them less vulnerable to unanticipated gaps between forecast situations and real events.

We suggest the following categories of information could be shared by all TSOs and placed in the database:

1. Parameters of existing and planned lines, transformers, switchgear and standard grid topologies, even if much information of this type is well known already on an informal or *ad hoc* basis
2. Real active grid topology (state of switchgears and bus bars) and most likely grid forecast for the following day
3. Historical at H+1 production of
  - a. individual power plants or groups of plants having an effect in flows on the high voltage grid
  - b. all wind generation units
4. planned and unplanned power plant outages or output reductions, together with the expected duration before the generation blocks affected will come back online
5. Real time physical load flow of all high voltage levels
6. Load and Wind forecast of all grid operators including their involuntary cross border exchanges of electricity
7. Day ahead loop flow probability, for all loop flows susceptible to prediction
8. Expected and binding nominations of cross border capacity

This database could then be used on a mutual basis by TSOs and, subject to legal and regulatory constraints, also as a public information system. If grafted onto ETSOvista, for example, it could offer greater transparency about not only cross-border, but also nationally internal, actual grid flows, together with future estimations as to physically and commercially occasioned load flows.

It is fair to presume that current exchanges of scenarios by TSOs and their resulting unilateral, or at best bilateral calculations, are less efficient than they would be through a European, or at least regional, standard and fully coordinated calculation. In a meshed network, subject to open access across borders, a standardized solution is crucial. It should involve obliging TSOs, when managing congestion across a series of borders, to agree *with each other* on TRMs, before they are accepted by any Regulator. Such a practice could for the first time since 2000 lead to objective calculations based on a common set of assumptions. Eventually the practice could evolve into a European standard 'reference base case scenario calculation' adjusted constantly for every hour of the year according to multiple data inputs from all high voltage transmission operators relating to all markets. If properly implemented through determined and concerted enforcement by Regulators, the solution would in the shorter term provide a means for maximizing rather than minimizing cross border capacity in central and southern Europe.

#### 5. The borders of Switzerland

In the specific case of countries bordering with Switzerland, re-dispatch and a set of commonly initiated NTC calculations, agreed for each border multilaterally between Terna, Swissgrid, the Austrian HV grid operators, RTE, RWE Netz and EnBW Netz, would be the best short run solution to assure the maximisation of allocated capacity at those borders. A balancing scheme and a market for balancing products in Switzerland are crucial for a liberalized market. Moreover this is the fundamental pre-requisite for a re-dispatch scheme at Swiss congested borders.

It is particularly important in the absence of concrete and proximate plans on the part of these TSOs or of competent Regulators to implement flow-based capacity calculation and/or allocation at the relevant borders.

It is also important that the TSOs' common calculation be done frequently, to establish dynamic yearly, quarterly, monthly and daily NTC estimations. In certain cases around the Swiss borders, we believe that currently these calculations, and corresponding exchanges of national base case scenarios, are performed only a few times a year.

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