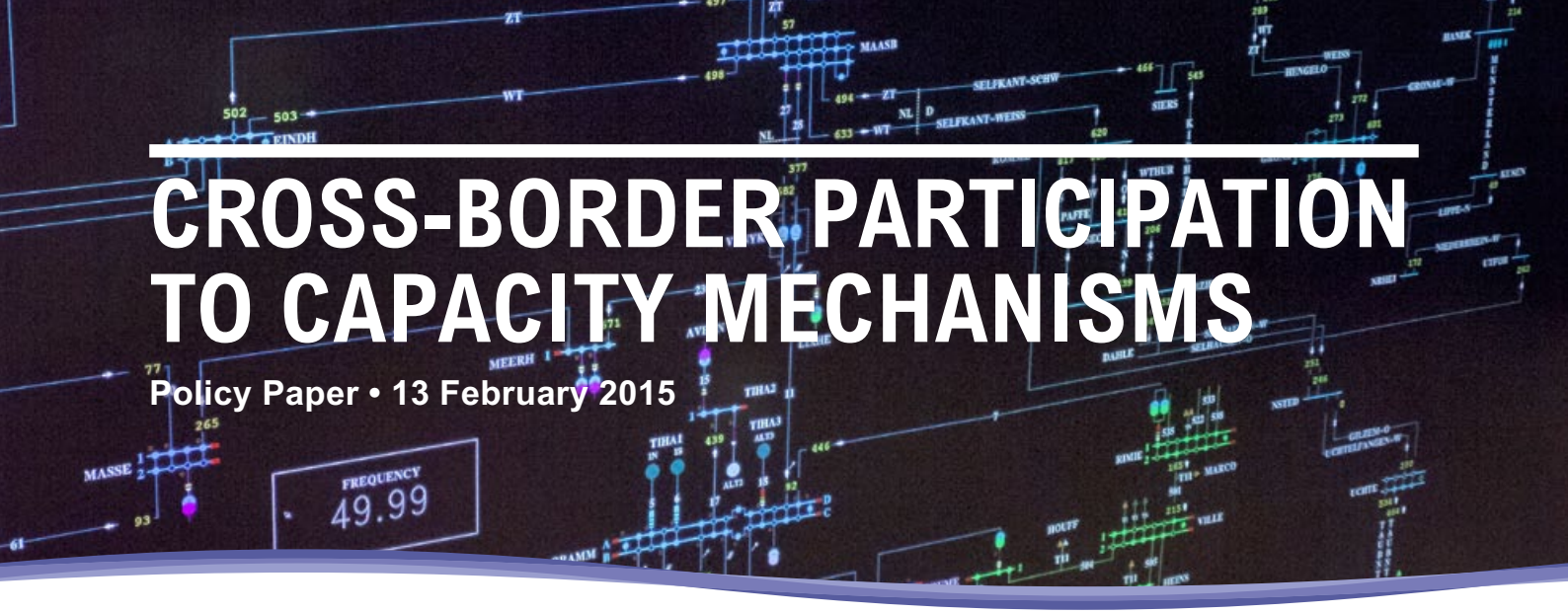

CROSS-BORDER PARTICIPATION TO CAPACITY MECHANISMS

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1 INTRODUCTION

Security of supply (SoS) is a core objective of EU energy policy, together with sustainability and affordable prices. To achieve these goals, the electricity sector is experiencing a rapid and unprecedented transition.

The associated challenges lie not only in implementing solutions already identified, such as stronger and more interconnected grids or well-functioning and integrated wholesale markets, but also in identifying new solutions. In particular, the design of today's European electricity markets needs to be improved to address present and future issues.

ENTSO-E is actively contributing to the design of future electricity markets, and has formulated a set of recommendations in its Market Design Policy Paper published in September 2014[1]. However, major concerns remain. ENTSO-E recommends that market participants be incentivised to contribute to solving system scarcities, (such as capacity and flexibility issues), for which they are responsible. To cover market participants' adequacy-related risks, the hedging dimension of the market design needs to be developed via appropriate products. Moreover, such a hedging dimension needs to be developed across borders, to preserve the efficiency of the internal energy market (IEM) and to ensure a European approach to market design.

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[1] ENTSO-E "Market Design Policy Paper", 15/09/2014

A reliable supply of electricity is such a basic need that it is a natural expectation for consumers, often taken for granted. However, the ability of the current electricity markets to deliver SoS objectives along with a sustainable energy mix and affordable prices has been questioned in several EU countries, leading to – among other measures – the implementation of national capacity mechanisms. In return, these non-coordinated actions have raised concerns on possible impacts on the IEM. As with security of supply, which directly affects system security, the preservation of the IEM and of its efficiency is a core concern of ENTSO-E.

This paper contributes to the ongoing debate on cross-border participation in capacity mechanisms, focused on the design and mutual compatibility of capacity mechanisms rather than recommending their existence or absence. Taking the existing situation as a given, ENTSO-E considers important to make the best out of it by ensuring coordination and smooth interactions between different markets. The overall objective is to increase the efficiency of the European system as a whole through appropriate consideration of cross-border opportunities.

In the IEM, cross-border contribution to security of supply results from two mechanisms: market coupling, which directs flows to the country where prices are highest, and transmission system operator (TSO) cooperation, such as real-time support in emergency situations. Cross-border participation to capacity mechanisms will have to be compatible with those two mechanisms. Therefore, cross-border participation has to be given separate and serious consideration in the design of any capacity mechanisms. Simply opening up the mechanism to foreign capacities will not suffice.

ENTSO-E has therefore identified guiding principles and developed concrete recommendations for the benefit of the European welfare, focussing on the mutual compatibility of capacity mechanisms and on the design of cross-border participation solutions.

Chapter 2 of this paper lists the overarching key principles, chapter 3 advises on the TSOs' role in capacity mechanisms, while chapter 4 gives more detailed recommendations on possible market design options for cross-border participation.

2 KEY PRINCIPLES

ENTSO-E considers it important to define some basic principles, which should guide the design of concrete solutions for cross-border participation to capacity mechanisms.

1. CONSISTENCY WITH THE IEM AND TARGET MODEL

Cross-border participation to capacity mechanisms should preserve the integrity of the internal energy market and be consistent with the electricity target model in all market timeframes (Forward, Day-Ahead, Intraday and Balancing). Distortions of cross-border trade should be minimised to avoid inefficiencies and higher costs for end-consumers.

2. CONSISTENCY WITH NATIONAL POLICIES ON SECURITY OF SUPPLY

While not questioning the current legislative framework which gives Member States clear responsibilities for security of supply, ENTSO-E believes the potential contributions of cross-border electricity flows should be adequately accounted for when defining national policies and targets for system adequacy. In case considerations on import dependency are part of the national energy policy, these should be clearly defined when designing cross-border capacity mechanisms.

3. EFFICIENCY OF CAPACITY MECHANISMS' INVESTMENT SIGNALS

To minimise total costs, electricity systems should rely on the most efficient resources (for energy, capacity, ancillary services, etc.). Capacity mechanisms should thus value and remunerate all capacities according to their contribution to adequacy in order to deliver efficient investment signals, with a market based pricing, and without undue discrimination between internal and cross-border capacities or between technologies. This also implies that market design solutions for cross-border participation to capacity mechanisms should give the right locational signal to capacities i. e. direct investment and usage where they are valued the most.

4. ADEQUATE CONSIDERATION OF AVAILABILITY CONSTRAINTS

As the contribution of capacities to system adequacy depends on their probability of being effectively available when needed, all relevant constraints need to be adequately taken into account. In designing market design solutions for cross-border participation of capacity mechanisms it is therefore essential to correctly evaluate limitations of cross-border capacity, especially during scarcity events – i.e. situations of high demand and tight supply.

5. REGIONAL COORDINATION

National governments, Regulators and TSOs should closely coordinate within their region / with their neighbouring countries when designing and implementing capacity mechanisms. This is necessary to enable cross-border participation and the development of consistent solutions at a regional level. Regional initiatives may also be useful platforms to build consensus towards a European approach to cross-border participation, compatible with national competences. In that process, Government, Regulator and TSO coordination is also particularly important when defining solutions for coincident scarcity situations. Clear, transparent and binding rules must be agreed to manage such situations, and are necessary to secure political and public acceptability.

6. SMOOTH IMPLEMENTATION

Market design solutions for cross-border participation should not be too complex, costly or lengthy to implement. Simplicity is an essential principle to implement realistic and compatible solutions across Europe, focusing on the added value that they can create. In this sense, a step-wise approach is recommended to allow for further improvements and progressive coordination at regional level.

Those principles are to be considered as a whole and applied in a proportionate way, acknowledging their possible contradictions.

3 TSOs' ROLE IN CAPACITY MECHANISMS

It is in the TSOs' interest that capacity mechanisms, where introduced, are well-designed and provide appropriate solutions for cross-border participation. This will ensure that system adequacy is enhanced at the lowest possible cost for consumers.

In many countries, TSOs have important tasks in the design and / or the implementation of capacity mechanisms and play an important role in enabling cross-border participation to national capacity mechanisms.

To carry out such tasks as best as possible, it is essential to define a governance framework with clear roles and responsibilities, compliant with current EU and national legislation, and consistent with the overall policy objectives of security of supply, affordability and sustainability. Such a framework must also ensure an adequate cost recovery and risk limitation for the additional tasks that have to be performed by the TSOs.

GENERAL GOVERNANCE FRAMEWORK

Reconciling national competences on security of supply with the reality of the internal energy market and of the interconnected transmission grids in Europe requires solutions to solve contradictions and to manage important complexities. Such complexities are becoming even more evident with the ongoing implementation of different capacity mechanisms in many European countries.

Coordinated solutions are necessary in order to avoid inefficiencies and distortions and to ensure the fairness of market design. At the same time, the presence of capacity mechanisms in one country should not result in artificial barriers to energy cross-border trade[1)].

Coordination across countries cannot be effective unless all relevant parties are involved and their respective roles are well defined. With regard to capacity mechanisms, various policy makers and stakeholders have relevant competences, legitimate interests or effectson their functioning: EU Commission, Governments, NRAs, TSOs, power exchanges, generators, customers, etc. The need to provide a consistent approach to cross-border interactions between national capacity mechanisms, or similarly between markets with and markets without capacity mechanisms increases the importance of a well-defined governance framework.

The introduction of capacity mechanisms in several Member States highlights the need for more clarity and consistency in the governance framework for security of supply.

In the IEM, wholesale electricity market outcomes are the key determining factor in cross-border flows, at least in the day-ahead and intraday timeframe. Market algorithms for day-ahead and intraday coupling feature rules such as price caps and curtailment rules which are crucial in determining these flows, with direct implications on security of supply in scarcity situations.

Non-harmonised or too-low price caps can result in cross-border flows which do not reflect the real mag-

1) This is for instance, the case between Russia and Finland, where the design of the Russian capacity mechanism heavily penalises exports to Finland, therefore distorting cross-border trade.

nitude of adequacy issues in a particular moment[1]. In cases where the same price cap is reached in several markets at the same time, there is no more price difference, and curtailment rules apply. TSOs, power exchanges, regulators and all relevant parties should closely coordinate to define these coupling rules taking into account these considerations.

Market rules which have direct implications on security of supply should be defined and agreed consistently with the whole governance framework.

1) On price caps, see : ENTSO-E "Market Design Policy Paper", 15/09/2014

SPECIFIC TSOs COMPETENCES

Clarity on the governance framework is particularly important for TSOs, which have to carry out specific tasks both related to capacity mechanisms operation and their legal responsibility for capacity allocation and congestion management, while complying with European and national legislation; respecting European and national stakeholders' expectations; and taking into account political implications and public opinion considerations.

- To enable cross-border capacity mechanisms participation, TSOs may need to be involved in a number of operational tasks such as the prequalification, certification and validation of capacities and in some cases, the activation process. Without going into the details of these processes, it is clear that an agreement between the involved TSOs, at least from the capacity importing and capacity exporting countries, is necessary to enable cross-border participation to capacity mechanisms.
- To allow cross-border participation to capacity mechanisms, one of the key responsibilities of all involved TSOs is the definition of the amount of the cross-border capacity able to participate. This amount depends on the security calculation done by TSOs together with cost considerations. This task is especially challenging considering the high level of uncertainty associated with the very long lead times of capacity mechanisms. In fact, an under- or over-estimation of available capacity would create costs for society; either by affecting the capacity mechanisms efficiency or by creating excessive firmness costs.
- Monitoring security of supply and adequacy is usually a legal TSO responsibility. Taking the results of an adequacy assessment into account in the allocation process of transmission rights for cross-border capacity trading would require a framework with a clear distribution of roles and responsibilities.
- Market signals (even VOLL[2]) may be insufficient to solve issues in a coincident scarcity situation in two or more countries. Therefore, TSO cooperation with clear rules agreed upfront is necessary. Such rules should define the physical treatment of interconnection flows in real time while taking into account the design and relevant outcomes of the respective capacity mechanisms. Potential implications of cross-border explicit participation in a capacity mechanism, physical or financial, should be taken into account.

TSOs play a crucial role in capacity mechanisms design and operation. Cross-border participation can only be enabled via their close cooperation within a well-defined framework. Especially challenging issues include the calculation of limits to cross-border participation and the management of simultaneous scarcity situations.

2) Value of Lost Load

4 MARKET DESIGN ISSUES AND OPTIONS FOR CROSS-BORDER PARTICIPATION

The concrete design of cross-border participation to capacity mechanisms depends on numerous features, many of which related to the specific design of the capacity mechanisms themselves. The aim of this paper is not to identify a one-size-fits-all model as it would be impractical and premature considering the status of the debate in Europe.

However, there are a number of key issues – also previously analysed by other papers on this topic – which deserve careful consideration and for which ENTSO-E would like to formulate recommendations. The objective is to support policymakers in identifying the best options for implementing cross-border participation solutions.

INTEGRATION OF DIFFERENT CAPACITY MECHANISMS, WHERE EXISTING

Compatible capacity market designs would create an opportunity for fully coordinated solutions with similar benefits as realised in the energy market coupling. Such solutions would be based on coordinated auctions for capacity products or coordinated trading on trading platforms. However, on the one hand it is unclear if such solutions are to be preferred to the alternative of enhancing the energy-only-market and, on the other hand, such a scenario seems very ambitious considering the existence of different capacity mechanisms already in place in Europe.

In the short term, it is therefore important to identify, agree and implement "intermediate" solutions for cross-border participation such as explicit participation models. The step-wise approach should not be understood as a unique path but rather as the implementation of solutions adapted to the specificities of an evolving context.

Consistent with a step-wise implementation approach across Europe, solutions without direct cross-border participation may also be applied. Such solutions imply reduced national demand of capacity to account for cross-border contributions to security of supply. These solutions can be implemented easily and avoid security of supply autarchy. However, they may be economically suboptimal in contexts where cross-border participation to capacity mechanisms has a significant value.

Considering the current diversity of market designs in Europe, pragmatic step-wise solutions are needed to ensure compatibility of the different capacity mechanisms.

KEY DIMENSIONS OF EXPLICIT PARTICIPATION MODELS

When analysing the "explicit participation" models in more detail, two key dimensions are generally debated:

- Participation: the subjects that can participate to the cross-border mechanisms- either capacity providers (generation/demand) or interconnectors themselves;
- Commitments: the basis on which capacity providers are remunerated – either depending on their availability to deliver energy or on physical energy delivery in pre-defined situations.

Participation

With regard to the subjects entitled to participate to the cross-border mechanisms, the choice between capacity providers or interconnectors should depend on the assessment of the structural deficit for that particular market: i.e. whether there are sufficient capacity providers available across the border, or, whether there is sufficient interconnection capacity to access the cross-border capacity providers. An appropriately designed capacity mechanism should aim at maximising the value of such limiting factor for adequacy, requiring participation of either one or the other accordingly, and possibly bundling offers.

Participation should therefore be open to interconnection or capacity (both generation and load) assets, but limited to those assets with the most significant contribution to security of supply, for the sake of simplicity. This is also true for the scope of participation: while capacity installed at one end of Europe somehow contributes to security of supply at the other end of Europe, the added value of allowing its explicit participation in all European capacity mechanisms would be limited compared with the induced complexity and associated costs.

As TSOs are in most cases owners and operators of interconnections, they can act as market participants or intermediate parties in an interconnector participation model. This raises some questions regarding TSO neutrality and transparency which must be appropriately addressed.

An appropriately designed capacity mechanism should reveal the value of the most limiting capacity factor (whether capacity providers or interconnection), while ensuring a practical and proportionate implementation.

Commitments

From an efficiency of cross-border trade point of view, ENTSO-E believes the availability model is less distortive for wholesale electricity markets than the delivery based models. In fact, delivery based models could potentially lead to activations of generation plants out of the merit order, therefore causing an efficiency loss if such activated plants participate in the energy market. These distortions could however be avoided in delivery based models if arrangements can be found to avoid such unnecessary activations.

On the other hand, a pure availability model could create situations of leakage in a coincident scarcity situation, as the energy may be delivered to another country. This issue could be tackled by ensuring delivery in coincident shortage situations, although this might be in conflict with the obligations of TSOs in the national and European framework.

Alternatively, the cross-border capacity might be de-rated to account for the risk on non-delivery. At a minimum, the availability model should be complemented by an obligation to bid in the relevant market timeframe, except for the interconnector participation model.

Both the availability and delivery models need close TSO cooperation and agreement on the treatment of cross-border capacities and interconnector flows during shortage events.

A careful design of the commitments associated with cross-border participation in a capacity mechanism is necessary. If not well-designed, cross-border participation could lead to either inefficient solutions or reduced contributions to security of supply in coincident scarcity situations.

IS CROSS-BORDER CAPACITY RESERVATION NECESSARY?

The design of cross-border capacity mechanisms participation often leads to the discussion on whether interconnector capacity should be reserved for this purpose. It should first be noted that efficient market coupling ensures that the energy flows to the market zones with scarcities, and that the netting process allows optimal reallocation of transmission capacities. Reserving interconnection capacity would therefore not give any additional guarantees on the firmness of cross border contributions to security of supply.

In addition, an approach that specifically reserves interconnector capacity for use in rare scarcity periods would mean that the interconnector capacity could not operate in the standard energy market on a day-to-day basis, which would be detrimental to social welfare by reducing cross-border energy trades. Therefore it is not recommended that the interconnection capacity is reserved for this purpose (except for netting obligations).

Cross-border participation to capacity mechanisms should not result in interconnector capacity reservation.

CAPACITY PROVIDERS AND PARTICIPATION TO MULTIPLE CAPACITY MECHANISMS ("DOUBLE COUNTING")

One last point ENTSO-E would like to address in relation to the specific design of cross-border participation to capacity mechanisms relates to the potential participation of the same resource to more than one (national) capacity mechanism. While this option clearly raises efficiency and fairness issues, this concept must be further explored to avoid unintended consequences.

Indeed, multiple participation in different capacity mechanisms can make sense in some specific situations (e.g. different seasonal peak loads in two neighbouring markets) and deliver value if overlapping commitments can be avoided. While this would mitigate the risk of creating inefficiency from overcapacity at a European level, it must be noted that implementing practical solutions appears particularly challenging.

Multiple participation in different capacity mechanisms can efficiently deliver added value in specific situations, as long as overlapping commitments are avoided and feasible solutions are identified.

5 CONCLUSIONS AND NEXT STEPS

Concerns on security of supply have resulted in a number of uncoordinated national and European initiatives, with significant impact on the electricity market design. As a potential threat for European market integration, this evolution calls for more coordination and more consideration for the value of cross-border contributions to security of supply.

ENTSO-E does not advocate a radical change in the governance framework of security of supply in Europe, but rather a clarification of the roles and responsibilities. In particular, the management of coincident scarcity situations is a challenging issue – even without considering the potential implications of cross-border capacity mechanisms – and must be addressed via clear, robust, and coordinated solutions.

To enable cross-border capacity mechanisms, TSOs will play a specific role based on their operational responsibilities, which will require a high degree of coordination and their involvement in the definition of market design solutions. A clarification of roles and responsibilities is a prerequisite to defining the scope of the required agreements between TSOs, for instance on the precise operational implications.

Market design solutions will need to focus on assets with significant added value, and be as simple as possible. A step-wise approach is recommended to quickly identify pragmatic solutions; while finding consensus on a longer-term vision (enhancing energy-only-markets, full coordination of capacity mechanisms, individual choices for security of supply, etc.) will be necessary.

ENTSO-E will promote closer TSO cooperation in the field of cross-border capacity mechanisms and security of supply coordination. ENTSO-E will provide its technical expertise to contribute to the definition of sound technical solutions for cross-border capacity mechanisms participation and to facilitate further dialogue among Governments, EC, stakeholders, NRAs and ACER.

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