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Electricity Market Reform: Consultation on Proposals for Implementation

Energy Norway welcomes the consultation on the GB Electricity Market Reform, initiated by the Department of Energy & Climate Change. Such a wide ranging reform of the electricity market design can only gain from the contribution of interested stakeholders representing a wide range of companies in the electricity sector and consumption interests.

Energy Norway is a non-profit industry organization representing about 270 companies involved in the production, distribution and trading of electricity in Norway. Energy Norway's members each year produce nearly 130 TWh, which is some 99 per cent of all power production in Norway.

Energy Norway welcomes that the Electricity Market Reform paper recognizes interconnector capacity should have the possibility to participate in the capacity mechanism. Indeed, the GB system can only profit from the participation of non-domestic generators via the interconnector, since they contribute to increased competition in the GB markets and to increased security of supply.

More specifically, increased competition via interconnector participation in the capacity mechanisms adds additional offers in the GB capacity auction, which will lead to lower capacity prices and thereby reduce costs for GB consumers.

In the long term interconnector participation will also improve the efficiency of investment decisions reducing costs for GB consumers. If interconnectors and non-domestic generators were excluded from participation, investment signals would be skewed in favour of local generation. Even if it were cheaper to meet security of supply standards by developing more interconnection capacity, investors would choose to develop new local power plants due to the additional incentive of the capacity remuneration. In the long run this would raise the cost of meeting the Reliability Standard and reduce possibilities for otherwise profitable electricity trade. Conversely, by allowing interconnectors and non-domestic generators to participate, an efficient mix between interconnectors and local production capacity will be built to meet GB security of supply needs and foster trade.

Another option for interconnected capacity participation from our perspective would be to include it in the new mechanisms to incentivise investment in low-carbon plants, the Contracts for Difference (CfDs). The aim of the mechanisms is to provide long-term revenue stability for investors in low carbon plants, which could be of relevance for Norwegian hydro power. As we have understood, however, the plans are so far purely directed towards domestic generation investments. We think that CfDs should also be open for new low carbon capacity delivered on interconnectors, and would be happy to discuss concepts for this more in detail.

Concerning the consultation paper, Energy Norway welcomes the points raised in chapter 4.2.2.6."Interconnected capacity" and question CM09 that opens the discussion to find models for the participation of interconnected capacity. Energy Norway has been considering these issues for some time and below you will find a detailed description of some of the models we have developed, their advantages and disadvantages and how they meet the Government's criteria.

Question CM09: "Are you aware of any solutions that might permit interconnected capacity to participate within the Capacity Market that would meet the Government's criteria as set out in this document?"

We have structured our response to this question by:

- firstly considering how the market arrangements can be best designed to “secure the flow” of power to the GB market during a stress event; and,
- secondly, setting out the practical considerations of how to enable the participation of interconnected capacity. This second section is structured under the three headings in the DECC consultation document (pre-qualification and eligibility, responsible party, and delivery).

Securing the flow

A key concern for the countries procuring capacity through a capacity market (CM) will be the extent to which they can rely on interconnected capacity to deliver power during a market stress event. This section considers these risks and discusses how arrangements can be designed to ensure power flows appropriately.

Interconnectors are at least as physically reliable as most generators. However there may be concerns that the power may not always flow towards a market in stress. This could be due to:

- *Imperfect short-term markets* – despite a strong price difference it is possible that the interconnector may not flow towards the high price market even if the neighbouring market were not experiencing a stress event.
- *Coincident stress events* could occur between balancing zones – power may not flow if the adjacent zone also is experiencing scarcity.

By the time of the first CM delivery year in 2018/19, we expect flows on the interconnectors to be determined through the market coupling algorithm in an integrated cross-border day-ahead market and through continuous trading in an integrated cross-border intraday market and finally also in integrated balancing markets. This will greatly improve the likelihood of the interconnector flowing into GB during a stress event, even one which is not forecast day ahead, since there is time to react in intra-day trading and in balancing markets. It is important to note that delivery of power is not dependent on a particularly deep and liquid intra-day market. All that is needed is a shared platform, where retailers' high demand for additional volumes will cause a price spike visible to generators in interconnected markets. Intraday markets are not, however, the last opportunity to ensure that power flows to the most stressed market. Integrated cross-border balancing markets offer a further opportunity for the TSOs to co-ordinate to ensure that the interconnector responds to the stress event. Hence, it is not just markets that are being relied upon – the TSOs also play a strong role in ensuring power is delivered.

As a result we believe that the risk associated with imperfect short-term markets will diminish to a low level. Taking the European Target Modell (ETM) fully into account, we've developed four scenarios for delivery in a stress event on the basis of the planned interconnector between GB and Norway:

Table 1: Scenarios for direction of flow in stress event in a well-functioning market

| Cause of the stress event | Day-ahead price situation | Market reaction in the intraday / balancing necessary? | Flow direction |
|--|--|--|----------------------------------|
| Situation 1: a cold snap in GB, forecast a week in advance | Stable higher DA prices in GB than in NO | Market coupling results in a flow from NO to GB | NO to GB – Energy delivered |
| Situation 2: an unforeseen event such as a trip in a plant | DA price: GB > NO | Market coupling results in a flow from NO to GB | NO to GB – Energy delivered |
| Situation 3: an unforeseen event such as a trip in a plant | DA price: NO > GB | Price spike in the intraday: GB > NO, market will react: stops GB export and triggers flow to GB If this fails, TSOs can reschedule the interconnector flow via the balancing market. | NO to GB – Energy delivered |
| Situation 4: an unforeseen stress event with a simultaneous stress situation in Norway | Stable higher DA prices in NO than in GB | Norwegian prices in the intraday and balancing remain higher than GB prices | GB to NO – Energy not delivered. |

Following implementation of the ETM, it is only in the rare case of a simultaneous stress event in Norway and the GB market where intra-day prices or balancing co-ordination may not be able to ensure the direction of flow towards the GB market (Scenario 4).

With regards to the planned interconnector between GB and Norway, the geographic distance between the two countries and the very different production system with thermal power on one side and hydro power linked to reservoirs on the other lead probably to a very low risk of coincident stress events in both countries. However, if this risk is of concern, it can be taken account of in the pre-qualification criteria of the capacity market (set out below).

We therefore believe that, particularly following the implementation of the ETM, there should be no reason to believe interconnectors provide any less system security than a local generator, beyond the risk of coincident stress events. This is the basis on which interconnector participation in the CM should be considered.

Practical considerations of participation

In this section, we consider three issues:

- Pre-qualification and eligibility
- The responsible party for participation in the capacity market; and
- The definition of delivery

Pre-qualification and eligibility

Energy Norway agrees with the current DECC thinking that the amount of interconnected capacity that may participate in the capacity auction will be determined centrally by a de-rating algorithm implemented by the System Operator for any relevant interconnector, as suggested on page 159 of the consultation document.

The factors that such an algorithm should take into account are connected to the physical reliability of an interconnector and, if necessary, the risk of coincident stress.

The approach to considering the probability of an outage is quite comparable to factors taken into account when de-rating production capacity.

If there were concerns with regards to coincident stress event, these could be handled probabilistically: Hypothetically, if country A and country B never had coincident stress events, reserves could be shared to the maximum of the physically reliable interconnected capacity. Conversely, if stress events in A and B always occurred simultaneously, it wouldn't make sense to share reserves. Given the reality will be somewhere in between these two extremes, a factor could be determined on a probabilistic basis reflecting a simulated probability of stress events in both countries.

By taking these two factors into account, the capacity of the interconnector can be adjusted to reflect the true reliability value of the capacity.

Responsible party

Current Government thinking with regards to the responsible party is still very open: two different options with the "interconnector capacity administrator" who is probably the interconnector owner by default, or "any party meeting certain eligibility criteria", which is referring to the non-domestic generators, are mentioned. The responsible party would bid into the capacity mechanism, gain revenues from participation in the capacity market, and bear the risk of non-delivery and the ensuing penalty. In relation to the advantages and disadvantages of making the interconnector owner or non-domestic generators the responsible party:

- Neither non-domestic generators nor the interconnector owner as the responsible party would have control over the flow of the interconnector, so this cannot be a determining factor.
- If the non-domestic generators participate and the delivery obligation is placed on them, the incentive to deliver during the stress event is placed on participants who are actually able to provide incremental power, increasing the likelihood of the interconnector flowing to GB. In fact, non-domestic generators may even have an incentive to deliver out of merit as a result of the scale of penalty from non-delivery. While administratively simpler for National Grid to contract directly with a single entity rather than many non-domestic generators, direct participation of non-domestic generators will also bring liquidity benefits in the CM auction, helping to improve competition and alleviate any problems of market power.
- The investment signal in interconnection is more direct if the interconnector is the responsible party i.e. the revenues flow directly to the owner strengthening the case for investment.

The choice of entity therefore depends to a certain extent upon the weight placed on these different factors.

However, there is also a legal question regarding the direct participation of interconnectors. Allowing an interconnector to bid directly into the CM may not be compliant with unbundling requirements. For example, although the Third Package does not directly discuss capacity markets, the spirit of the unbundling requirements therein relates to the benefits of ensuring network operators do not have interests in wholesale markets. It is therefore possible that the EC concludes an interconnector owner, who is designated as a TSO, should not be allowed to bid into a CM. Whilst it would be difficult to predict how the EC would react to such a proposal, recent experience suggests that the burden lies with the party in question to prove there is not a conflict of interest. The legal risk of this option may therefore be considered higher than the generator led option.

Given that neither of the above mentioned options ticks all the boxes and since participation through an interconnector necessarily involves both non-domestic generation and the interconnector owners, Energy Norway suggests some hybrid options for consideration, where non-domestic generators and interconnector owners share responsibility, revenues and the penalties.

The key feature of these options is the allocation of risk. If the risk of non-delivery is placed on only one party (interconnector owner or non-domestic generator), they are left managing a risk which is out

of their control. For example, generators are not able to control the physical availability of the interconnector despite relying on it in a stress event, and the interconnector cannot control any generation to respond in the market.

The hybrid options are aimed at incentivising each party to be physically reliable, and for generators to respond to market signals during a stress event.

Hybrid option 1 - The "Ticket to the Auction" Model

In a first round, the interconnector owner auctions out "tickets" for participation in the GB auction equivalent to the amount of de-rated capacity available to the non-domestic generators. The "ticket" could be linked to auctions for an FTR, a PTR, a PTR with Use-it-or-sell-it, or an entirely different product. Non-domestic generators would bid for the ticket, and those winning a ticket, would have a right to bid into the GB capacity market. The "ticket" needs to be compatible with binding European Network Codes on Capacity Allocation and Forward Capacity Allocation

The interconnector owners would receive the revenue of the "ticket" auction, which will depend considerably on what kind of "ticket" is sold. The non-domestic generators would end up with the marginal price in the GB auction minus the amount paid for the "ticket".

As noted above, because non-domestic generators participate in the capacity market, this model provides a strong incentive to those able to deliver energy to be generating in times of stress, as well as increasing competition in the market.

In addition, the selling of the "ticket" by the interconnector operator could also result in an obligation on the interconnector owner to be physically available. If a PTR or FTR were combined with the ticket then, consistent with the sale of PTRs or FTRs more generally, the interconnector owners would also bear availability risk outside stress events (as they would have to buy back PTR or FTR rights if the link was unavailable).

Hybrid option 2 - The "Two Auctions" Model

In this model, the interconnector owner would organise a first auction in which non-domestic generators are allowed to bid in capacity to fill the interconnector. Successful bidders would commit to provide capacity to generate at times of GB system stress (and pay a penalty if they do not). Non-domestic generators would receive the marginal price established in that first auction. The interconnector owner would then bid into the UK capacity market, based on the volume and prices received from non-domestic generators. Since the interconnector owner is acting as an "agent" for the generators, care has to be taken with the contractual arrangements, to make this model compatible with the third market package.

As noted above, because the interconnector owner participates directly in the capacity market, this model is administratively simpler, and results in revenue flowing directly to the interconnector owner, hence incentivising more interconnector development. In addition, this model allows an obligation to be placed on the non-domestic generators increasing the likelihood that they are physically reliable

and available to generate during a stress event. This is achieved through the contract agreed in the first auction for the interconnector capacity.

In Energy Norway's view, both of the hybrid options are viable options worthy of further development. They both ensure an efficient allocation of risk between the interconnector and generators, and so enhance the probability of delivery of power to GB relative to a "pure" option. The main difference between them is the party that is actually bidding in the CM. If it is the interconnector then it is administratively simpler, but if it is the generators then there are potential competition benefits from a more liquid CM auction.

The models described above are not the only options and many different models can be created by merging or altering their elements. All models will have their advantages and disadvantages; the choice depends on how the different advantages and disadvantages are weighted. Therefore, we consider the descriptions above as a contribution to the debate and not as final choices.

Delivery

The UK Government considers for interconnectors that "an obligation to deliver energy will be met when flows of electricity to GB are delivered across an interconnector throughout a period of system stress". This poses the question of what determines the direction the flows will take: if it is purely the capacity mechanism or if there are other factors to consider.

As we have set out already, with the implementation of the ETM, the question of delivery is just a challenge in very exceptional situations, essentially assuming a low probability coincident stress event, which leads to higher prices in Norway even in the intraday and balancing market, so that neither the market nor the TSOs can react.

In that exceptional case the question arises of how the CM can countermand market results. We are doubtful that it is possible to do this in a way that is compatible with the Third Package¹. This question is independent from the choice of model for the participation of interconnected capacity and cannot be answered by the interconnector owners, non-domestic generators and the GB System Operator alone. It can only be answered in dialogue with the European Commission.

Conclusions

Energy Norway hopes that the models discussed above, which are just a selection of many possible options, can contribute to building a working design for the interconnected capacity participation in the GB capacity market. In our view, the GB capacity market can only gain from interconnector participation, since it reduces cost in the short and the long term, and in the long term creates correct investment incentives for domestic generation and interconnectors and prevents trade distortions. In addition, we believe ETM implementation will resolve many apparent concerns over their contribution to security of supply. We believe that issues of delivery in exceptional extreme situations can be

¹ Beyond placing obligations on non-domestic generators as discussed above, which will result in incremental power but not guarantee a direction of interconnector flow

addressed through discussions between the GB government, interconnector owners, non-domestic generators and the European Commission.

We thank you for the possibility to contribute to the consultation and are available for further discussion of interconnected capacity participation.

Best regards
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