

EnBW Energie Baden-Württemberg AG · D-76180 Karlsruhe · Germany

Per email: wind@ceer.eu

Mrs Fay Geitona
CEER Secretary General
28 rue le Titien
1000 Bruxelles
Belgium

Durlacher Allee 93
D-76131 Karlsruhe
Germany
Phone +49 721 63-06
Fax +49 721 63-12725
www.enbw.com

Registered Office: Karlsruhe
Amtsgericht Mannheim
HRB 107956
Tax no. 35001/01075

Name	Dr. Eckart Ehlers
Department	Regulatory Compliance (HOL ONC)
Phone	+49 721 63-23484
Fax	+49 721 63-13816
E-Mail	e.ehlers@enbw.com

CEER public consultation on “Regulatory aspects of the integration of wind generation in European electricity markets” (C09-PC-43 and C09-SDE-14-02a)

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Dear Ladies and Gentlemen, dear Mrs Geitona,

EnBW welcomes the opportunity to comment on the CEER report “Regulatory aspects of the integration of wind generation in the European electricity markets”.

The report addresses many important issues regarding integrating renewables and particularly of wind generation in the European electricity markets.

Generally, the future challenges will be different from the historical ones as the 20-20-20 goal will lead to a significant increase in the share of wind power capacity; meeting these challenges will require a holistic dynamic approach where all relevant stakeholders need to be involved.

We share the objective of identifying challenges and proposing solutions for maximising the integration of wind generation, as well as all other fluctuating renewable energy sources, while taking into account that system security is ensured. EnBW is clearly in favour of market based solutions and thus also calls for the continuous work to integrate European wholesale markets.

Question 1: How will the expected growth in wind generation affect the markets in which you operate? What are the key challenges you foresee?

The growing amount of wind generation will have a substantial impact on the European power markets.

Chairman of the Supervisory Board:
Dr. Claus Dieter Hoffmann

Board of Management:
Hans-Peter Villis (Chairman)
Dr. Bernhard Beck
Christian Buchel
Dr. Rudolf Schulten
Dr. Hans-Josef Zimmer

Due to the minimal short term marginal costs and the priority dispatch, the increase of wind generation will affect the price formation in the wholesale markets, especially in day-ahead and intraday time-frames of spot markets. Thus, we will see more fluctuating electricity prices as they can already be observed in spot markets with high wind penetration. Also, we may observe more frequent times with prices of zero or negative (where possible) in hours with high wind in-feed and low demand.

This will, in turn, also effect the operation and pricing of conventional power plants. Those will be influenced by new needs concerning ramping capabilities and flexibility with more frequent start-ups and shut-downs.

Generally, EnBW will follow and analyse the experience obtained with negative prices, the impact it has on integrating wind power, its combination with different types of support schemes and the impact on system security.

Furthermore, increasing wind generation will cause larger imbalances in the control area corresponding to higher reserve demand as well as higher average balancing energy prices. Additionally, the displacement of conventional generators most probably will lower the available balancing reserves which need to be flexible units, and may lead to higher reserve prices. Therefore, the possibility of lower conventional generation capacity combined with the fluctuating wind power will make efficient balancing a key challenge.

The connection of wind generators is not only an infrastructural issue as system stability and especially reactive power demand also have to be considered. Therefore, higher flexibility as well as an adequate share of dispatchable or storage capacity is required to balance the intermittency of wind energy generation.

Further growth will require a more integrated view on wind generation as a part of the generation mix. Therefore, we believe that there needs to be a development towards a market design where wind generation as low marginal cost units needs to obtain the option of bidding into the market.

Another key issue is the growing probability of congestions, both cross-border and internally. To avoid congestions especially on interconnections (which are a challenge for cross-border power flows and which are a key factor to be considered in European energy trading) there is certainly a need for investments into transport capacities in order to connect areas with high wind generation (onshore and offshore) to areas with high consumption.

Further, well-functioning cross-borders markets, especially for the shorter time-frames of day-ahead, intraday, balancing energy and ancillary services together with efficient congestion management tools, are a prerequisite to integrate the increasing amount of wind energy generation.

Finally, we see the need for a continuous evolution of support mechanisms for renewables. A gradual convergence of the support systems at a European level would also facilitate the convergence towards a European integrated European internal market.

Question 2: What are the implications for market rules? Can you identify changes which would better facilitate integration of wind generation, including management of intermittency?

EnBW does not see the need for designing completely new market models. However, the expected large share of wind power calls for changes to the existing market rules that integrate the fluctuating nature of wind generation as a substantial and system-relevant characteristic of the supply side. EnBW believes that these rules should account for undistorted price formation. Then appropriate spot market signals will develop to incentivise consumers as well as all generators, to interact with the electricity system in order to optimise the value of the fluctuating generation capacity.

In this perspective, EnBW is of the opinion that the ongoing work on market design in the framework of the Florence Regulatory Forum (Market Integration Design Project, now followed by the AHAG) offers already a valuable starting point as there have been target models for all timeframes and to some extent roadmaps for implementation developed. The combination of the further development and implementation of coupled day-ahead markets, further developed and also coupled cross-border intraday markets and adequate cross-border balancing mechanisms are essential steps.

Therefore, it is important to work towards a speedy integration of European wholesale markets applying efficient congestion management mechanisms across all timeframes which will support to better facilitate the integration of wind generation. This includes day-ahead market coupling through implicit auctions. Also, creating Europe-wide harmonised regional intraday markets that allow the trade of energy close to real time would further broaden the possible buyers/sellers of energy and increase liquidity of the market.

Finally, the integration of cross-border balancing energy markets for exchanging balancing energy would allow the transfer of energy from areas with a surplus generation to areas that have a deficit, diminishing the need for curtailment

In addition, demand side management, storage facilities and pooling solutions with different types of generation (which can provide marketable products), could be additional measure to cope with the fluctuation of wind generation.

In the long run, the development of market and system rules should lead to clearly defined requirements for wind generation as well as for conventional generation.

It is important that TSOs and generators as well as traders can act in market structures which incentivize increased flexibility in generation, cross-border trade and demand management. In this framework, it is necessary to further develop coordination between TSOs, generators and traders in order to integrate the intermittency of wind energy and maintain the high level of security of the European power system and to help TSOs manage this process. The service provided by this coordination will give an overview of the situation and of important modifications in the generation affecting more than one TSO's area.

It is necessary that TSOs have data (both real time and forecast) about wind generation in-feed level (both from transmission and distribution connected wind generation) and disclose these data to the public domain, so all market participants (as it is

already done in Germany) have access to these data. TSOs also need market structures that enable them to have sufficient real-time control capacity.

The flexibility of operation could e.g. be enhanced by promoting solutions that would extend the group of power plants providing reserve capacity and ancillary services (to include small power plants, wind generation, biomass power plants, etc.). Especially large onshore and offshore state-of-the-art wind farms may in the future (given the right incentives and market structures) provide reserves to the system and thereby help balance the system.

Question 3: Would moving the market's gate-closure closer to real-time facilitate the deployment of wind generation? Would this have any adverse consequences on the functioning of the electricity power system?

Generally, market rules should be developed in order to cope with large and growing shares of wind energy.

With respect to gate-closure, the closer we get to real time, the higher the probability to accurately forecast the wind power, especially as the precision of the wind generation schedule is improved. This should create incentives aimed to reach high quality load forecasts including also a better wind generation forecast which should lead to lower costs for the whole system by reducing the need for reserves.

At the same time it is to mention that allowing for a closer GCT will not remove the need for more flexibility, dispatchable capacity and demand response initiatives. It is also important to recognise that there is a need for an appropriate balance between the gate closure and giving the TSOs sufficient time for the capacity calculation by the TSOs as well as for the matching time by the power exchanges.

Thus, we think that as a first step well developed and liquid (cross-border) intraday markets are an important feature, where the GCT should be as close to real-time as possible (subject to the above mentioned necessary lead time), preferably at h-1. We do not see a need to change the current GCT in the day-ahead market (being at 12:00). Rather, we think that the harmonisation of day-ahead gate closure time across Europe is necessary. Harmonising and bringing the GCT of intraday markets closer to real time, does not take away the importance of (preferably coupled) day-ahead markets with harmonised day-ahead market GCT. The matching of day-ahead markets based on wind forecasts will remain the main starting point for the daily planning cycle of all involved operators as it combines liquidity with larger opportunities for operational planning of generation and transmission, compared with close to real time intraday market closure.

Also, due to limited predictability of wind energy (max. 3 days-ahead) a high percentage of feed-in volumes of wind are sold on the day-ahead markets. As already available in the OTC-markets, we strongly encourage PXs to also work on tradable products that are efficiently adapted to markets with a high share of wind (and in the nearby future also solar) energy.

Question 4: Are emerging cross-border congestion management models compatible with wind generation? Should further attention or priority be given to intraday capacity allocation mechanisms and markets, in light of the issues associated with forecasting wind generation?

As mentioned before, we think that the initiatives to develop European target models across all timeframes from multi-year-ahead to intraday are an important step to further integrate European Power markets.

The implementation of market coupling between national and regional markets through day-ahead implicit auctions and the further development of market mechanisms to incorporate wind generation into the normal market processes instead of treating it separately will enhance the integration of wind power into power markets.

Particularly, intraday markets will play an important role in trading electricity from wind power as it is closer to the operating hour. A main priority is therefore to develop continuous intraday market mechanisms aiming at creating a transnational liquid and simple to use market platform (comprising both platforms for energy trade and cross-border allocation mechanism; “one-stop-shop” approach).

Finally, the cross-border target models should also include mechanisms for cross border trade of ancillary services.

Generally, EnBW sees a vital need that all relevant stakeholders are involved in the discussions on the further development of market design aspects.

Question 5: Should wind generation be subject to the same balancing obligations and the same types of charges as other types of generation?

EnBW is in favour of developing adequate balancing obligations in a way that wind power as well as other types of generation can be subject to the same balancing obligations. Whether or not wind generation is currently subject to the same balancing obligations and the same type of charges as conventional generation depends on the actual support scheme as well as compulsory defined integration mechanism. To ensure security of the system, TSOs need to have adequate tools in order to fulfil their responsibility to balance the system in the operational hour.

Imposing uniform balancing obligations on all generators is an essential component of a fair and transparent energy market. All participants should face the balancing costs that their actions impose on the system. It is important to support and bring forward the Internal Electricity Market and to ensure an efficient interplay in the market between different kinds of market players (different technical characteristics).

Seen from a market perspective being exposed to imbalance obligations/costs could incentivise all market players to invest in more accurate forecast tools and creating efficient intraday-trading facilities, increasing the effectiveness of wind energy integration. The better the quality of day-ahead and intraday wind forecasts, the better the marketability of wind on these markets.

With regard to ancillary services, existing wind generation should be incentivised to participate according to their technical characteristics (full participation to voltage control, adapted participation to frequency control, curtailment possibility needed for system security).

To ensure security of supply while allowing integration of more wind generation now and in the future, new wind generators should be encouraged to participate according to the possibilities given by the best technology available when the power plant is connected.

Efficient market structures in ancillary services markets with possibilities for renewable generators to pool their turbines may also be a helpful add-on with respect to adequate system operation.

Question 6: Should TSOs engage in research and development (R&D) to address issues associated with a large share of wind generation included in the network? If so, how should the regulatory framework require or support this?

It is very important that TSOs are involved in research and development while an adequate cost recovery scheme needs to be implemented. The involvement of TSOs in research should include specification of R&D topics, analysis, validation of results and full scale demonstrations and certainly the public disclosure of these activities particularly on the outcomes.

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TSOs need to engage in R&D to understand the short and long term action needed to develop power systems with a significant share of intermittent generation. In order to make wind energy an integral part, innovative solutions are necessary.

The investments necessary for the realization of these R&D activities have to be fully covered by regulatory frameworks (tariffs, national and European research funding). TSO schemes for R&D activities need to deal with the natural time lag between the realisation/ implementation of the benefits of the R&D activities and the years in which the associated costs have been made. In this respect harmonization of regulatory frameworks regarding the facilitation of the collaboration of the pan-European R&D activities is an essential element in the realization of R&D efforts by TSOs.

Question 7: Should wind generators face the same types of network charges as other new generators, calculated using the same methodology? What is needed to provide a sufficient incentive for generation in choosing where to locate? What is needed to provide an appropriate balance of risk among market players? When should this not be the case?

Network charges

Wind power is usually located where the prevailing wind conditions are best and construction areas are available. These locations are very often far away from the consumption centres; thereby evoking or aggravating network constraints.

Generally, we think that network charging mechanisms have to ensure that all types of generation sources (including wind generation) face adequate and comparable requirements in order to create a level playing field; e.g. charges need to reflect costs and need to be non-discriminatory.

Location

The implementation of economic signals for generation location is a difficult task. Nevertheless the need for locational signals could be increased through the development of offshore wind generation, located in areas far away from load centres.

Therefore EnBW would opt for having the possibility to include locational signals in network charges for conventional generation. Generally, we want to stress that allocation signals should be standardized at least on a regional if not on a European level in order to avoid market distortions. Long-term security of supply is dependent on new capacity being placed where it is needed.

Balance of risk

To provide an appropriate balance of risk among market players there should be adequate tariffs and market terms for all market players. Wind generation should have an incentive to contribute to efficient solutions. It is important that the technical possibilities of wind generators are used for the benefit of the system, which must be reflected within appropriate and non-discriminatory network codes.

Given the increasing number of connection applications for wind power generation, it is appropriate to provide for economic guarantees to TSOs in order to commit all applicants to actually carry out the investment projects adequately TSOs should not be made responsible for stranded investments in network connection by the regulator if planned projects are not realized.

Regarding the costs for the connection of offshore wind parks, a pro-active handling by the National Regulatory Authorities is therefore necessary, as there is a completely new infrastructure needed. Given the different lead-times of planning and installing power system structures on the one hand and e.g. offshore parks on the other, a modular development of the offshore grid should be adopted in order to allow for high flexibility and in order to support fast development of offshore wind generation capacities (see question 9).

In several Member States positive experience has been obtained with the identification of priority connection zones by governmental entities. This can help TSOs carrying out timely investments that should help to overcome the time discrepancy between wind generation projects and new network development and reinforcement projects.

TSOs should get the ability to build these connections and should be allowed to reimburse these costs in the tariff calculation. Due to specific techniques used for the connection of offshore wind farms and due to the R&D character these costs must not be included in any benchmark.

From a market point of view, transparency regarding development of available grid capacities is of utmost importance in order to have a level playing field.

In addition, market-driven construction of merchant lines may be helpful in some areas in case of long-term congestions – examples of the last years in this respect are the Estlink cable between Estonia and Finland and a new merchant line at the Swiss/Italian border in operation since Q4 2009.

It is also important that, in case of wind power generation connecting to distribution networks, the impact on the entire system operation is taken into due account by DSOs in cooperation with TSOs.

Question 8: Broadly, what is the appropriate allocation of responsibilities, risk and cost among market players in developing new network infrastructure (e.g. ahead of or in response to new generation connections)? Should this be different for wind generation? Where is harmonisation required?

It is important that TSOs have the competence to develop new network infrastructure, and to develop technical standards and grid codes in an integrated approach for both onshore and offshore grids. In this regard the incentives to develop the grid infrastructure given through the national regulation are of vital importance. It should not matter if this is related to wind generation or other types of generation.

Additionally, we think that initiatives regarding merchant lines can be helpful instruments to develop grid infrastructure. Such initiatives should be made in close cooperation between investors, TSOs, regulators and eventually PXs.

Also, further improvement of authorization procedures is an urgent task which Member States need to work on. The development of wind generation (and renewables in general) will increase the need for stronger grids and interconnectors in the mid to long term.

Therefore, the authorization procedure should be simplified and include a strict coordination between the grid and the RES plant. Possibly, they should be harmonized across Europe as the international alignment of authorization procedures for the location of offshore wind generation will also improve the required approval process in order to realise an offshore grid (instead of many different offshore connections to offshore wind farms).

Also, harmonisation of responsibilities is needed in order to generate the same incentives for investments and operation for TSOs in all Member States. Further, adequate responsibilities for all kinds of power generation are important to ensure that all rules regarding the connecting to the grid are met.

Question 9: Do you agree that the “supergrid” issues for regulators identified in 5.1 are relevant? Is there anything else European regulators should be considering?

EnBW agrees that these issues are relevant for regulators and supports the statement that the development of a “supergrid” and other projects (interconnectors) requires that regulatory uncertainty is minimized by also taking the practical expe-

periences into account. It is essential that building commitments need to be based on pan-European social and economic benefit analysis, while it is also important to implement adequate cost-sharing provisions.

The European regulatory authorities should continue to focus on the proposed modular development of a European "supergrid" where investing in interconnectors has to have high priority.

In the context of improving competitiveness, sustainability and security of supply through cross-border trade, a fully integrated European "supergrid" has a key role.

Therefore, a harmonised regulatory framework is required and national regulators should work towards a European approach in order to stimulate the development of interconnector investments.

It is important to develop a common framework of technical and market rules for wind power connected to transnational grids. If a European "supergrid" is to be build then there is a need for common harmonized rules.

At least, existing rules should be analysed in order to be sure that they are compatible with a European "supergrid". If they are not compatible, regulators should consider aspects concerning grid access, use and system responsibility, which are essential, especially when the "supergrid" is used not only for wind energy but also by other market players.

Additionally, the transportation of electricity from the coastal areas to the load centres should be considered within the discussion concerning the European "supergrid".

Question 10: Is the current ownership structure of the offshore lines or their regulatory framework a potential issue for the integration of offshore network? Are there other considerations affecting this ownership structure?

There are several important issues that need to be addressed in order to stimulate the development of an offshore network.

EnBW finds it important to clarify the regulatory framework before addressing the ownership issue. With the current ownership models and structures of offshore assets it is unclear who is responsible for building an offshore grid.

Also, responsibilities differ regarding ownership, operation and maintenance of offshore assets; not to say that there are differing grid codes.

Therefore, policymakers and regulators need to facilitate the political wish to explore the renewable resources in the North and Baltic Sea.

The development of an offshore grid will benefit if the entire offshore infrastructure (on DC level) is owned and operated by onshore TSOs or alternatively by an entity that complies with all the requirements on TSOs.

Long term grid planning may lead to modular development of the offshore grid. Anyone chosen on least cost criteria to develop offshore connection may not apply technical solutions compatible with such possible future modular developments.

Therefore the TSOs grid planning responsibility should be extended to offshore grid planning as well. Environmental impact of connections will also be reduced if TSOs are in charge of clustering connections from several generators (avoiding radial connections only on a project by project basis).

It is also important to ensure that the offshore grid can be interconnected. Therefore coordination between onshore reinforcements and the offshore network is a requirement as an interconnected offshore grid as well as the relevant connection to the load centres will increase European electricity market integration. This demands strong coordination between TSOs but also a clear support by (local) governments for faster permissions and authorisations processes while also ensuring international coordination.

Delays in building off-shore wind generation should not result in financial losses of network operators. Such delays could arise because the technological requirements and performance capabilities are not yet well understood. This makes it difficult to estimate the operation of the power systems and the potential operational costs and benefits of these assets.

Question 11: Do you agree that the Regional Initiatives should be used to address the issues associated with the development of the regional projects? What challenges does this present?

EnBW fully supports the work of the Regional Initiatives as they do provide a pragmatic bottom-up approach to further integrate the European power markets. Therefore regional projects should generally be addressed within these Initiatives while at the same time we also think that wind issues are not necessarily regionally limited in scope and thus a cross-regional coordination is necessary.

Generally, we would propose not to add additional specific wind projects to the Regional Initiatives. Rather, we believe that the focus should be on completing the already well advanced projects particularly on day-ahead market coupling initiatives as well as the establishment of cross-border intra-day facilities. Both will certainly contribute to the market-based integration of wind power.

Question 12: What other issues should European regulators consider in relation to the integration of wind generation?

To support the market integration of wind power, market rules should ensure that wind power and other generators are treated equally. Adequate operational and technical requirements for wind generators are essential to maximising wind power penetration while preserving system security.

TSOs face substantial investments in the development of the transmission grids, creating flexibility in generation and demand and intelligent control (Smart Grids, electricity storage systems). Regulation must support this development and reinforce

incentives for independent TSOs to act in accordance with socioeconomic welfare optimisation (e.g. investments in infrastructure and cross border congestion management).

Also, regulators should work towards creating a regulatory framework that promotes European solutions for interconnection of offshore windmill parks to several countries (e.g. Kriegers Flak projects).

We also think that in the long term, consideration is needed regarding the governance arrangements for incentives for wind generation assets being connected into the distribution networks and the responsibility of the TSO with regard to grid connection and overall real-time system security. A significant increase in the distribution connected wind farms along with smart meters and demand side systems create will generate further challenges.

Also, the legislative requirement of priority dispatch may limit the capability of power systems to integrate further wind generation. This needs to be addressed in order to evaluate whether such provisions will hamper the achievement of the renewable targets.

Finally, CEER emphasises that RES and market issues cannot be treated separately but in a broader context; thus the development of renewable energy generation should also be harmonized with other areas (e.g. adequate generation mix, balancing, promotion of CHP generation).

EnBW hopes that its comments contribute to answer CEER's questions on its Report on "Regulatory aspects of the integration of wind generation in European electricity markets".

We remain at your disposal should you have any further enquiries.

Kind regards.

Yours sincerely

EnBW Energie Baden-Württemberg AG

i.A. Dr. Eckart Ehlers