

E.ON proposals to amend

CEER Public Consultation Paper (C09-SDE-14-02a) on Regulatory Aspects of the Integration of Wind Generation in European Electricity Markets

The E.ON Group welcomes CEER's consultation paper that summarizes in a very broad context regulatory aspects and prospects how to integrate the increasing amount of wind energy into the European electricity market. This is highly valuable as the regulatory framework in many countries differs significantly. Our comments reflect the wish to promote an efficient internal market for electricity by applying market-based mechanisms and market-acknowledged best practices. This includes without any doubts a full support for the market integration of renewable generation in an efficient and particularly market-based way.

For the time being, some 70 GW of wind power generation capacity is installed across Europe. The amount has to be further increased to achieve or exceed the national 20-20-20 targets. To make that happen, it is still a key element **to enhance the European transmission network** in order to bring the wind power generated electricity from the remote sourcing areas to those places where the market wants them to be. The major obstacles to new lines and interconnectors to overcome bottlenecks are well known. This makes us urge regulators, power exchanges and TSOs to undertake all efforts **to make best use of existing infrastructure and to establish cross-border implicit trading platforms**. These platforms, allowing a continuous intra-day trading, would let wholesale traders react immediately on actual wind generation output and sell any surplus of green energy to other markets. Negative prices as an extreme occurrence could be avoided or limited. A **market-based support scheme for renewable generation** itself may furthermore contribute to an integrated European energy market where renewables will play an always more important role.

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

Member States with non-market-based support schemes for renewable energies across Europe establish de facto a separate market which is not at all connected to the European electricity wholesale market: The more wind power is installed, the more both markets are separated. Project developers observe local wind conditions and the level of i.e. in-feed subsidies in a specific country, rely on priority or guaranteed access (Art. 16 Section 2 Directive 2009/28/EC) and calculate their pay-off. Long-term energy surplus or deficit and consequently long-term market price forecasts do play only a minor role. Even worse from a market perspective, this leads to a high concentration of wind power in certain beneficial areas (from meteorological and support scheme perspective), which affects system security in the absence of timely available new infrastructure and creates negative market prices. We consider such a development as non-sustainable and favour a different approach in the long-term interest of renewable energy market integration (see our statements under question 2).

The major effects are:

- System security is increasingly affected if e.g. the grid extension is not keeping pace with the increasing of wind production forcing system operators to apply the

right to curtail also the wind production for system security purposes (Art. 16 Section 2 c Directive 2009/28/EC).

- The intermittent nature of wind generation requires significantly increased capacities of flexible generation to be available to call upon at short notice when wind generation increases or decreases unexpectedly (balancing energy). Depending on the specific national system in place, these higher costs of those balancing services are usually socialised and seldom targeted to the wind generators themselves. This may lead to extra costs for consumers.
- With differing incompatible national solutions, and a variety of certificates within one country having different purposes (e.g. in UK ROC, LEC and REGOs) will lead to imperfect and illiquid markets for certificates. The further growth of renewable energies may drive the persistence of previous national solutions as all wind farms, operating under these conditions, will request a right of continuance. Therefore, there is an urgent need to immediately make those national systems compatible and linked to allow a more intensive national and ideally EU-wide trading.
- For generators and traders of conventional power the increase of wind generation will influence the pricing of the power market: Wind generation has one of the lowest short run marginal costs and will therefore displace conventional power plants. In extreme situation with high wind generation output and low demand this can lead to negative prices. Pricing and profitability of conventional power plants will be affected by lower utilization rates. Although needed for balancing and reserve purposes, conventional generation will suffer from disadvantageous incentives to invest.
- Concentration of wind energy in shore regions requires further grid enhancements in order to transport the surplus energy to other regions. In interim periods when grid enhancements are not in line with the increase of wind generation, further congestions will have to be managed at interconnection points or even within national grids. Due to the high geographical concentration of wind power in those areas, we have already observed a decreasing volume of cross-border interconnection capacities. This hinders cross-border trading and limits potentials for price convergence.

Taking the market development as described above, we see the key challenges of the growing wind production in higher trading risks due to lower predictability and the intermittency, distortion of power prices and increased cross border congestions. Furthermore, the roles and responsibilities within each national market concerning renewable energy differ to a great extent, which will increase with greater penetration of wind generation. Taking Germany as an example, the TSOs are obliged to forecast wind production and to sell the wind energy at the day-ahead exchange, to balance the actual wind in-feed in the intraday market, taking a role and risk which is not generically part of the operation of a transmission grid. In other Member States more of this responsibility lies with the wind generator.

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?

In order to cope with the growing part of intermittent wind generation most efficiently, a balanced combination of following measures will have to be applied:

Increase predictability

Currently applied Congestion Management Guidelines require generators above 100 MW to report on their output. We assume that this threshold was chosen to cover the main part of the market and to avoid an inappropriate burden for smaller generators. As soon as the total wind generation plays a pivotal role in the market, such an information release would be highly sensible as well. Even if the role of wind generation in the market can be discussed, whether it is pivotal or not even today in the light of negative prices, it is absolutely clear that it will be in the near future.

Therefore, we see a great need for an improved **data base for long-/mid-term wind patterns**. This would allow a better evaluation whether, where and what kind of conventional generation is economic.

Having furthermore the experience of an increasing number of wind turbines and using the most representative wind turbines for building up a data base for wind forecasts the deviation of actual wind patterns from the prediction should be decreased. An EU wide **harmonised day-ahead and real-time transparency on the wind generation** as stated above will help the market to foresee and to react to surplus or deficit of intermittent wind power. Demand and production side management in combination with smart grids will lower the need for costly peak demand reserves.

Establish market coupling day-ahead and continuous intra-day markets

The current shortcomings of interconnectors or national infrastructure are well known. Therefore it is the task of today to deal as efficiently as possible with the capacities of existing infrastructure, particularly in the day-ahead and intra-day horizon. In this light we urge regulators, TSOs and power exchanges **to establish an implicit intra-day trading platform which allows for continuous trading** from one country to another in one step. We see an ELBAS-like approach which includes opportunities for OTC trading as an appropriate solution. However, we also want to draw CEER's attention to the fact that many Member States do not comply with the already existing requirement to establish intra-day markets according to paragraph 1.9 of Congestion Management Guideline.

As there is a common sense of a price coupling as the European day-ahead target model, we like to stress the need for long awaited practical steps.

- The more efficiently day-ahead and intra-day markets are linked across borders by implicit mechanisms, the better hourly surplus and deficit situation can be countertraded and the more price convergence across Europe is supported.
- The more liquid day-ahead and intra-day markets due to the full marketing of wind power are, the better the opportunity to react on hourly surplus and deficit conditions and to minimize overall balancing costs.

Enhance network and interconnections

The increased investments in interconnectors will play – as described in the Report – an increasing role to cope with fluctuations of wind generation. A **higher level of those cross-border capacities** can therefore support an export of surplus energy and let particularly neighbouring countries benefit from cheap energy sources. The same applies analogously in principle to internal congestions where they have a direct impact on cross-border capacities or where they are responsible for a separation into several market areas.

- Day-ahead and intra-day markets will work the better and the more efficient, the higher available interconnection capacities are.

Market-based RES support scheme and market integration

We recommend **an EU-wide market-based support system for renewables** such as direct marketing, quota, certificates or premiums where the wholesale market price is the key element of wind power generators' remuneration. Therewith combined is the long-term sensible obligation of wind generators to balance themselves in the framework of balancing circles which will drive investment into electricity storage options, smart connection of different generation facilities or even smart grids and metering, making best use of flexible consumption. Energy surplus and deficit and consequently rising or falling forward prices would guide investment decisions and lead to a more equal distribution of wind power generation across Europe. This would ease the technical integration into transmission grid and distribution networks and allow a smarter integration into market processes.

- The more wind generation is part of the publicly accessible electricity markets, the more markets will be liquid.

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?

We agree that moving the market's gate closure closer to real-time could facilitate the deployment of wind generation, particularly, if the responsibilities for the nomination and for any deviations lie with the producer of wind energy.

However in this context two issues from the market design perspective should be taken in consideration:

- the interest in liquid and reliable day-ahead markets as underlying for price formation and thereby necessary identical obligations for all sources of power
- the necessary minimal time for safe calculation of grid capacities and matching at exchanges.

In the light of this, the gate closure of day-ahead market should be kept at 12 am (CET). A gate closure time for intra-day markets as close as possible to real time is in the natural interest of market participants as it allows them to use the latest available information to optimize and balance their portfolios. This, in turn, minimizes the need for balancing energy services and contributes to overall low system costs. Therefore, where not yet existent, national and cross-border intra-day markets with 24/7 operations need to be established to facilitate such a gate-closure close to real time (H-1).

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?

The amount of wind power in-feed is subject to capacity calculation models and this current practice is in principle reasonable. However, if we compare the level of interconnection capacities in areas with large shares of renewable generation

throughout the recent years, we see a clear downward trend of cross-border capacity levels. This applies particularly, but not exclusively, to long-term capacities.

For that reason, we would like to stress the need to update any capacity calculation also in the intra-day horizon, where this is not yet common practice. Since the intermittency and low predictability of wind power will always remain as a source of volume uncertainty, which requires an adjustment of positions over time, we ask strongly additionally for a higher priority for the development of intra-day markets, where not yet existent. Even more, we urge regulators, TSOs and power exchanges to set up implicit cross-border trading platforms which allow a continuous trading until close to real time (H-1) from one country to another.

However, we do not advocate any reservation of intra-day capacities and request to strictly follow the principle of maximizing cross-border capacities in accordance to article 6 paragraph 3 of Regulation 1228/2003.

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

Yes. We would also stress that this includes necessarily the responsibility for nomination and scheduling procedures. The Spanish and Danish system may give first indications how this could work.

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?

As TSOs are responsible for safe and efficient operation of networks at the state of art, we agree with an engagement in research and development in their fields of activities. Such R&D should be focussed on identification of open issues and research needs. Technical systems and solutions should be the task of the industry. However, we do not support extensive research departments in TSO companies.

Question 7a: Should wind generators face the same types of network charges as other new generators, calculated using the same methodology?

Yes. This should also apply to the same treatment in the framework of grid connection and other grid codes as long as it is justified from a technical perspective. An appropriate integration of DSOs' view is indispensable.

Where incompatibilities exist between conventional and renewable generation with respect to system security relevant technical requirements in grid codes, we find it reasonable to set incentive to refurbish older wind generation units. This is of particular importance when wind generation represents a major share of generation which is online.

Question 7b: 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?

As stated in our answer to question 2, we recommend establishing a market-based system where renewable generation is also subject to wholesale market prices. Long-

term price trends will thus signal where to locate wind generation best. Grid connection costs may also set an incentive. This will lead to a more efficient distribution of renewable generation across Europe and does better cope with the well-known difficulties for new interconnection lines (even if every new line is highly appreciated from a market and renewable perspective). This would be also more in line with the signals coming from the wholesale market and indicating the value of electricity compared to the current state.

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 up to the TSOs to forecast long-term supply and demand trends and to summarize it in a generation adequacy report. This could also lead to an indication where appropriate locations with existing infrastructure for new generation from network perspective would be.

Generation companies of any type should in principle pay in the same way for their individual network connections. However, contrary to any onshore generation, offshore wind generation lacks of any basically developed network infrastructure. Therefore a grid connection would be extremely expensive and would deter investments to the benefit of the 20-20-20 target. For that reason, we recommend a solution where TSOs provide a basic network which facilitates in a second stage individual network connection of individual offshore wind parks. Costs for the basic infrastructure should be socialised, individual grid connection costs are to be privatized.

In the end, it remains the responsibility of each Member States to contribute to an acceleration of permitting procedures for any new network and any new generation facility.

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?

Yes. We see TSOs as responsible entities in developing an offshore grid as an extension of the basic network infrastructure as stated under question 8 if it can be proven to be beneficial for the general public. An investment will be made by the TSOs if the financial incentive and the regulatory framework are sufficiently attractive where we have some doubts.

A practical way might be to create a separate operator of an offshore grid, financially supported by interested TSOs. CAPEX and OPEX costs of the offshore network should be incorporated into national grid charges; a fair treatment within the Inter-TSO scheme is to be safeguarded.

Due to the principle opportunity to in-feed offshore generated power in the network of different countries, we consider such an offshore network as the main driver

- to harmonize RES support schemes and transform them into a market-based approach
- to harmonize wholesale market design features to make best use of such a network.

In the long-run, we think that several offshore wind farms will compete with each other on scarce in-feed capacities in the direction of a country with the highest market price.

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?

Ownership is not relevant as long as

- a full third party access is guaranteed
- the offshore lines could – in addition to linking specific wind parks with the onshore network – also be used for the transmission of power from other wind parks or power from or to other countries.

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?

We recommend not to overload the Regional Initiative with further tasks before the previously given challenges are solved. The Regional Initiative could optimally contribute to renewable generation if they complete their current action plans as follows

- Establishment of a one layer day-ahead price coupling: the more countries with different types of generation the better
- Establishment of national and cross-border intra-day markets where not yet existent: implicit continuous trading with gate closure close to real time (H-1) would use remaining trading potentials across countries and more balance portfolios
- Amendment of regional transparency reports with the latest available wind power in-feed forecast to be released before day-ahead market gate closure and in a certain interval also intra-day

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

The Directive 2009/28/EC foresees the option for Member States to apply cross-border flexibility mechanisms such as statistical transfer, joint projects and joint support schemes (Art. 6 to 11). These flexibility mechanisms, mainly joint support schemes, clearly support cross-border harmonization leading to more efficient utilization of wind energy. Any support and guidance also from European regulators for these mechanisms will help Member States to apply these options also in the current phase of implementing the Directive.

We are also of the opinion that smart grids will help to integrate intermittent wind power as a more flexible demand and production side management will lower the need for costly peak demand reserves. Therefore, we see a clear need for sufficient incentives to invest in those grids to make best use of their potentials.