

EREG Consultation on the Integration of Wind energy into European Electricity Markets

Statement of RWE

Introduction and General Comments

RWE Group welcomes the opportunity to submit an opinion in the framework of the EREG consultation on the integration of wind energy into European electricity markets.

The Renewables Directive sets out very ambitious targets for Member States. In addition, Article 16 requires Member States to either provide for priority access or guaranteed access to the grid system with respect to connection. The Directive also requires that renewables have priority with respect to dispatch, subject to secure grid operation, and curtailment of renewable generation to be minimised. These raise a number of important issues and questions about how substantial wind generation can be integrated into electricity markets.

As a general point, it is worth underlining that the Renewables Directive does not require a harmonised approach with respect to support and the approaches currently being taken to integrate wind energy differ widely. In some Member States, generators of wind energy enjoy connection advantages, are exempted from balancing obligations, and guaranteed compensation (e.g. fixed feed-in tariffs). By contrast, renewable generators in other countries are charged with more obligations, less secure revenue sources based on market prices and have to take more risks. These differences reflect varying national political targets, different climatic and geographical conditions and diverse regulatory approaches.

As things currently stand, we do not believe that Member States' freedom to specify individual schemes should be limited. Therefore the approaches taken to integrate wind into the system may also have to continue to vary by Member State at this stage. Likewise, retrospective changes to support schemes for existing wind farms (on which investors did rely on) should be avoided as this will reduce future willingness to invest.

Notwithstanding this, we believe it is generally preferable for market-based rather than administered solutions to issues such as balancing and constraints. This will lead to a better incentive structure for market participants and a more efficient overall system which will minimise the costs to consumers. Progressive harmonisation around market-based solutions will also encourage greater integration of electricity markets between Member States which is a crucial element for effective integration of wind generation as penetration grows.

Growing penetration of wind generation may well, initially make electricity prices more volatile, particularly in spot- and balancing- markets. It is very important that prices are left to find an appropriate level without intervention, and this may mean negative prices, since this correctly reflects the cost of stopping and then re-starting conventional plants as wind output varies.

Finally, in order to avoid excessive incidences of constraints and potential curtailments it is important that the necessary infrastructure is put in place in parallel with renewable development. The necessary infrastructure investment requires an appropriate return. In the meantime, there is an important balance to be struck between using economic signals to seek to target renewable investment towards regions that will avoid creating additional constraints, and the risk that these will hamper the pace of development of renewables.

Comments on Specific Questions

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

Growing proportions of wind generation will require conventional power plants to operate in a more flexible manner, particularly where renewable capacities are supported by priority dispatch requirements. As a consequence we expect that the value of flexible generation capacity will increase.

However, a key challenge will be to provide sufficient flexible capacities **in time** including:

- operation of existing conventional power stations in a more flexible manner.

Today, certain types of power plants (i.e. lignite-fired and nuclear power plants) are operated primarily in base-load mode. With more wind generation penetrating the market, these plants may be required to operate more flexibly; therefore, in particular, lignite-fired power plants may have to be retrofitted with equipment to allow more flexible operation.

- adjustment of the power plant portfolio in order to provide more flexibility:
 - new plants will have to be specifically designed to be operated more flexibly
 - storage capacity may have to be extended: since the economic potential for additional pump-storage is limited, other technologies like Compressed Air Energy Storage or heat storage for CHP must be supported
- the introduction of efficient and effective demand-side-management mechanisms. This includes a market driven push of demand towards wind intensive periods.

These challenges may require revision to existing regulatory regimes in some Member States; for example to cope with technical restrictions in the event of a sharp increase in wind generation; i.e. if feed-in from wind will be higher than the demand because of increased wind capacities. Regulators may need to accept the costs of

capacity management to deal with these variations, depending on the regime prevailing in the Member State concerned. This may be through the actions of the system operator, or through electricity prices becoming more volatile, and even negative, particularly in spot markets and balancing markets. In these circumstances it is very important that prices are allowed to find an appropriate level without intervention as this will improve incentives for flexibility. A stronger integration of markets may alleviate price fluctuations. To support Europe-wide energy trading which is hindered by congestion in transmission systems, transport capacity needs to be increased.

The imbalances in the control area increase with growth of wind generation. This causes higher reserve demand as well as higher average balancing energy prices. Due to the displacement of conventional power generators the available balancing reserves decrease which leads to higher reserve prices.

The importance of efficient tools for short- as well as long term forecasting of wind generation will increase for all market players. This will have a significant cost effect especially for small players.

Connection of wind generators in remote locations affects system stability and increases reactive power demand.

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

Considerable wind penetration has already been successfully achieved in the German and in the Spanish market on the basis of the rules prevailing there. We consider that the structure of the UK market is also very capable of incorporating a high level of wind generation without significant reform. Therefore, provided that the regime within individual countries seems to be internally consistent and creates the right dynamic incentives on market participants, there is not necessarily a need for harmonisation of market rules at this stage.

Including renewable energies into the short term dispatch optimisation might provide additional flexibility as the share of wind generation increases further. Since they have priority access to the grid, wind operators may have to be compensated if their installations should take part in the dispatch.

In the long term all generation assets in the market should be dispatched on the basis of market incentives.

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?

The assessment of the CEER that increasing wind penetration will necessitate moving gate closure close to real time across all Member States is correct. This will better facilitate the functioning of electricity markets in the face of a larger proportion of intermittent generation. Harmonisation of gate closure times to 1 hour or less in intraday trading should be implemented as rapidly as possible across the European Union. TSOs should also examine the scope to reducing this further so as to allow for more accurate forecasts of wind output to be used and to allow the rest of the market to respond. Nevertheless the appropriate gate closure times should give the TSOs some planning time to be able to use the information.

Reducing gate closure times will not have adverse consequences for the functioning of the electricity power system, indeed the opposite is the case. The further that gate closure is away from real time, the more likely that market participants' forecasts of wind output will be inaccurate. This will ultimately be more costly for consumers and distort price formation in electricity markets. It will also prevent correct price signals passing through to potential investors in flexible generation and demand response capabilities.

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?

Emerging models for cross border congestion management have, to date, largely focussed on coupling of day-ahead markets. This is welcome and has given an important impetus to the development of integrated markets at regional level. However, increasing the penetration of wind will mean further attention is required on intraday capacity allocation and harmonisation of the way that intraday and balancing markets function. Intraday allocation is already a legal requirement under 1.9 of the congestion management guidelines that form an integral part of Regulation 1228/03.

It is essential that cross border trading should play an increasing role in providing flexibility in individual Member States as the influence of wind generation increases. We strongly advocate explicit long term auctions of financial transmission rights alongside market coupling in order for cross border suppliers to manage risks.

Cross border balancing mechanisms should be designed to give the right incentives to market participants. With any TSO-TSO arrangements it is important that the party ultimately providing the balancing service is fully rewarded for having done so on the basis of prevailing market prices. If not, incentives to provide balancing services to TSOs will be dulled. In the longer term, there is no reason why balancing markets cannot be set up on a regional basis with a common merit order as discussed in the Project Co-ordination Group (PGC) paper for the most recent Florence Forum. In addition, we think that a BSP-TSO model should be implemented at least for a transition period.

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

One goal of European and National legislation is the increase of renewable energies. To achieve this goal support for renewable energies is necessary. This support could be in form of financial support for the generation, priority access to the grid or also other forms of like different obligations and charges.

The support mechanisms in place in different Member States and the market rules that apply to renewable generators are not consistent. This situation, which will be difficult to alter, implies different approaches being used to manage intermittency. For example the systems in the UK and Germany are markedly different in terms of support for renewables, their requirement to balance mechanism and the transmission access arrangements.

As discussed in question 2, provided the regime within individual countries is internally consistent and creates the right dynamic incentives on market participants then differences in terms of e.g. balancing obligations are tolerable.

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 the grid is the key element for the integration of larger share of wind generation, R&D by TSOs must be accepted and is crucial for the further success of wind power. R&D could range from studies to real new technology approaches. To achieve the goals quickly and to include the knowledge of the TSOs in running and balancing the grid, R&D should be done by the TSOs. The regulatory framework must accept the costs for these R&D activities in an appropriate way. There should be an obligation, that the results of these studies are available for all market participants.

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?

From a network's point of view there is no economic difference between connecting wind generators and other generators with the grid.

Grid operators are also required to avoid discrimination between network users. Therefore the grid operator must treat all generators, conventional or renewable, equally and any exceptions have to be effected based on transparent, comprehensible and testable criteria. All generators must equally comply with grid connection and access rules.

Therefore the structure of network charges for wind generators should not be any different from others, whether these relate to connection or use of the system. Network charges have to reflect the real connection costs and have to be non discriminatory.

The decisions concerning grid connection must be based on security, quality or continuity of supply criteria, according to which the grid operator should direct the generator to the connection point with the appropriate technical characteristics such as short circuit impedance or availability. Connection rules must also be objective and non discriminatory.

RWE would like to point out however that the need for any harmonisation in field of Network Connection Criteria is not immediate. We recommend that the principle of subsidiarity is applied and any harmonisation regarding the grid access and connection is scrutinised thoroughly with the focus whether different rules set by different national regulators really pose a problem. Harmonisation should not be pursued for the sake of harmonisation.

Regional signals could contribute to an overall optimal siting of generation, but this is only possible on a European scale in order to not distort competition. The difficulties in designing a fair and transparent scheme are considerable. In any case, the choice of wind generation locations is mainly driven by local wind conditions.

Incidentally, in Germany network tariffs must only be paid by loads, generators do not pay any annual network charge. However, wind and any other generators should pay their connection costs. E.g. in Germany the grid connection costs of wind offshore generators are socialized to all grid users up to now. Such costs should be transparent and fairly distributed, calculated for all types of generation using the same criteria. In order to find the optimal connection point for a generation, the total optimum - consisting of all necessary grid extension costs – has to be decisive. Furthermore there must be clear rules for separating connection costs and grid developing costs.

The German grid tariffs methodology has been developed 10 years ago. The model postulates that electricity is flowing from high- to low voltage- grids. Generators on lower voltage levels get a reward for the feed-in because of avoiding grid costs on higher voltage levels. Increasing reversed grid flows caused by growing decentralised generation put this model into question for the future. Nowadays additional grid developing costs are often triggered by huge local generation, which have to be paid by the consumers in the respective grids. But this applies for all generators and is not restricted to wind generation.

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?

The grid operator should extend grid capacity according to demand (generation and load). Grid operators should get a fair return for such investment.

In the event that the necessary grid extension cannot be erected due to licensing problems, new generation may be the subject of constraints. If the regime envisages compensation payments by network operators in case of such constraints, the cost of these payments should be allocated to network users/consumers by transparent and openly declared mechanisms that provide sensible short term and long term economic incentives.

One example is that, in the German renewable scheme renewable generation has equal generation rights compared to cogeneration if a bottleneck occurs. This seems not to be appropriate as the heat of cogeneration is normally needed for production processes. Therefore industrial cogeneration should have priority.

The complex processes and unpredictable long lasting timetables for building and construction authorisations are a major issue. Authorities have to speed up the processes for building and construction authorisations of transmission lines, including land planning, with clear criteria, transparent guidelines and deadlines, appropriate appeal mechanisms and the consistent and transparent definition of the roles of various authorities. European harmonisation of authorization procedures, responsibilities and incentives for investments and operation is desirable. Further harmonisation is needed with respect to

- regional and cross-border plans and timetables for the development of wind generation
- network development plans with a view to continue accommodation of wind capacities
- rules for financing the required investments for grid enhancement

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?

European regulators are responsible for European or regional issues regarding the regulated network. We agree with the four listed issues, which should have the main focus on cost efficiency and a weighed burden- and benefit sharing between all involved member states as well as transparency and predictability. There is a need for a European wide accepted scheme for socialising the additional transmission costs with regard to increasing wind generation.

The compatibility of support schemes is not an issue of the NRAs neither for the European regulators. The support schemes are developed with regard to increase the renewable energies. Support schemes are instruments to foster the market with regard to the renewable energies. Based on the given market scenario the network should be developed. The focus of the regulators is the reaction on the market demand and not the issue of building up markets and establishing the renewable energy in the energy market as a whole.

In order to avoid wrong dimensions of the new transmission capacities, effects on regional power prices should be evaluated in cooperation with generators to anticipate these effects for further investments into the regional generation mix.

It is important to develop a common framework of technical and market rules for wind power connected to the onshore grid as well as to the offshore supergrid. With a view to the full integration of the offshore supergrid the aspects concerning grid access, use-, and system responsibility as well as the transportation of electricity from the coastal areas to the load centres must be considered.

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?

The given ownership structure based on the implementation of the 3rd legislative package is an appropriate bases for building up a European wide infrastructure for the European wide integration of wind generation in the electricity market. Independent from the ownership structure the regulatory regimes should give incentives to the network operators to invest in the needed infrastructure. Therefore the network operators need financial incentives and a predictable regulatory system to foster the infrastructure for the European wind market. Faster permissions and authorisations processes and international coordination are essential for rapid infrastructure development. In order to stipulate building up infrastructure, we should foster the increase of grid capacities, too, which are not treated on a regulated basis getting a fair rate of return from the market for building up new infrastructure.

A feed-in point onshore, as intended for numerous projects today, does not hamper the integration of an offshore wind farm in general. But as several offshore wind farms offer economies of scale by connecting them via a common grid infrastructure, it may become advantageous to transfer the responsibilities to the onshore TSOs.

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?

The Regional Initiatives are an important interim step towards the ultimate goal of a Single European electricity market. Without the Regional Initiatives, much of the progress towards integrating the electricity markets would not have been possible.

The development of wind generation must, of course, be taken into account when Regional Initiatives act in terms of grid planning and market integration. For example, the harmonisation of gate closure times or grid access conditions will become even more important if wind energy generation is increasing. Regions with market coupling would benefit from having common grid access models for renewable energy. There is also now a good case for greater integration of markets and a reduction in the number of regions.

Also, more wind capacity means more interconnection capacity locked for system reliability purposes, hence less capacity available for commercial transactions. This is a key issue for any Regional Initiative.

Large wind generation projects, in particular offshore, often go beyond the scope of specific regions, though. In these cases, the Regional Initiatives are running the risk of being overburdened. Here, coordination should take place directly at EU level, incorporating ACER, or via specific regional groups like the ENTSO-E North Sea regional group.

Regional regulatory oversight generally runs the risks of not agreeing upon the respective costs that are associated with cross-border projects. This might be even more the case when it comes to defining the costs and benefits of cross-border renewable projects where costs differ due to different support schemes and where the benefits cannot easily be determined in a quantitative way.

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

In the long run, the separation between the markets for electricity and the market for renewable electricity needs to come to an end.

Ultimately it would be desirable for renewable support mechanisms, transmission access rules and balancing obligations to be aligned. This will lead to more integrated and liquid markets which in turn will support more renewable capacity.

In the long term there should be a level playing field for all technologies and one single European market with harmonised rules.