



Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

Council of European Energy Regulators (CEER)
wind@ceer.eu

18 February 2010

Dear Fay,

Highlands and Islands Enterprise (HIE) is the Scottish Government's agency responsible for economic and community development across the northern half of Scotland. Renewable energy resources in HIE's area constitute the greatest concentration of potentially exploitable renewable energy resources in the UK. HIE along with its local partners (Shetland Islands Council, Orkney Islands Council, Comhairle nan Eilean Siar, Highland Council, Argyll & Bute Council and Moray Council) has been proactively working to reduce barriers to the development and deployment of renewables in the region for a number of years.

The Highlands and Islands is categorised by the EC as a peripheral regional, and also a region of low population density. The development of the renewable energy sector offers significant economic opportunities to this region, hence our combined interests in and commitment to the development of the area's natural resources.

HIE very much welcomes the opportunity to respond to this consultation. Furthermore we would be very pleased to contribute on an ongoing basis to discussions on the integration of wind energy (and other renewables) into European energy markets and regulatory structures. Some of the questions raised are of very significant and timely relevance to challenges that projects in the North of Scotland are facing.

HIE has responded to the consultation questions later in this response. We also have some of our own questions and observations first, which are summarised here.

The consultation process

HIE is not familiar with the consultation process for CEER – we believe this is the first consultation from CEER to which we have responded. It would be very helpful to understand the process and the next steps. How will CEER integrate the findings from this consultation? Is there any decision-making process that the findings will feed into, or is it simply to inform the thoughts of its membership?

Regulation and support schemes

The consultation touches in several places on the interaction of renewable energy support schemes with grid access and charging, but there are no specific questions on this topic. The impression is of some working assumptions being made which are left unchallenged in the consultation. For the avoidance of doubt we feel that CEER should test these assumptions.

For instance the Executive summary states that *"it is important to bear in mind the interaction of support schemes with the costs that are borne by wind generators through network and market arrangements."* And later on page 16 it states that *"To ensure the*

investment is economic and efficient, MSs should concentrate on providing support for wind generation through these support schemes rather than through the grid and market arrangements."

HIE agrees that the interaction between network costs and remuneration is a relevant consideration, and we endorse CEER's sentiment that *"It is important that the incentives provided through the support scheme are compatible with the treatment in the market and network arrangements (and vice versa)."* However we do not agree with the later inference that this makes locational network charging the right approach. Furthermore there are many, many variations of what might be a locational network charge or a support scheme. It is the detail that matters to generators and to consumers, and it would be wrong to use some high level principles to justify one or another regime. It is important to examine the outcomes, and ask if these are the desired results.

We feel in general that the consultation is quite lacking in an evidence base to justify the validity of some of the principles stated. It would be instructive to compare and contrast the outcomes generated by different regimes – consumer prices, renewable energy generated etc.

The remainder of this response is on the consultation questions.

Consultation questions

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

In the UK the growth in wind energy is starting to fundamentally challenge the current regulatory framework in the UK. The areas mirror many of those areas reflected in CEER's consultation including:

- Notification timescales for contract volumes and for the system operator
- Market arrangements for system services which currently do not adequately accommodate the characteristics of wind energy, making participation difficult
- Investment in infrastructure – in the UK this is largely triggered by generator's own underwriting commitments, creating a significant barrier for small schemes triggering large upgrades. Furthermore wind energy projects typically complete before infrastructure, and the underwriting trigger is too late for the infrastructure to be on time. There is therefore a major lag in system upgrades.
- Grid access rules
- Grid charging – for HIE the main barrier is that the locational charging methodology targets the full cost of main system upgrades in peripheral areas, but shares these costs with other users in areas closer to 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?

The issue of intermittency and market integration has been the subject of extensive research, development and demonstration in a number of markets. The consultation

touches the surface of this but does not provide an exhaustive review of the state of the art. Improvements lie in:

- Improved forecasting of wind power
- Improved system operator balancing
- Reconciling new practices with market arrangements – through exemption from market rules or refinements / changes to market rules

Furthermore the consultation refers to wind energy as “unpredictable” but this is not really accurate. It can be variable, compared to say, baseload power. But it can be predicted in different timescales to different levels of accuracy. Sometimes it exhibits better predictability than conventional plant – for instance it does not tend to suffer a sudden loss of a large infeed, and in so far as its output is dependent on the weather, its day-to-day output can be more predictable than the commercial decisions driving some thermal plant operators. It is also more reliable in the long-term because it is insulated from fuel price fluctuations. These qualities are all beneficial – the fact that wind is less predictable than thermal at say, the day-ahead stage, is a disbenefit largely driven by the inertia of existing market structures, rather than any inherent technical problem that cannot be solved.

(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 consultation does not distinguish between gate closure for energy contracts and notification periods for the System Operator. In a number of jurisdictions, including GB, notifications to the market operator and the system operator are separate and distinct. For instance in GB the consultation cites half hourly gate closure, but this is for energy contract notification, not system balancing. The system operator National Grid uses grid code rules to obtain completely separate notifications from individual power stations on a best endeavours basis.

The point here is that a half-hour cut-off is a little arbitrary, and it helps wind plant in so far as closer to real time notifications allow a chance to improve forecasts – but the motivation here is to avoid cash-out, as opposed to developing forecast tools that best meet the system operator’s needs. In other jurisdictions wind energy plant have worked directly with system operators to develop improved practices. Some use one centrally-procured forecasting tool managed by the system operator, which has the benefit that the system operator trusts and therefore does not feel the need to replicate it. Others require individual plant to forecast their output to specified timescales. In most cases there are refinements to the notification timescales, and / or to the imbalance settlement, to accommodate the characteristics of wind energy.

Ideally, we would suggest the focus should be to incentivise practices that get the best that is possible and economically feasible from wind energy plant, whilst ensuring that the system operator is satisfied and can improve and learn at the same time.

(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?

No – day ahead allocation mechanisms will not be very helpful for wind energy. Interconnectors can be a useful balancing tool in systems with high wind energy penetration and it would seem better to explicitly recognise this in capacity allocation rules rather than have to manage the aftermath of an initially inefficient allocation.

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

No, not where it doesn't make sense. Existing balancing rules are built around the characteristics of conventional plant. As more renewables, wind energy now but other plant in the future, increase their penetration, then it is only sensible to develop mechanisms in which they can usefully participate.

In GB National Grid has already started to look at this, having noticed that wind plant is not currently participating actively in the existing Balancing Mechanism. In response it is developing a new service "*designed for the provision of the reduction in output specifically from sites that do not or can not participate in the BM. This service will provide us the ability to curtail a variable/specified volume of generation with varying response (and utilisation) times.*"¹ This illustrates the need to incentivise what plant can provide, rather than penalising plant for what they cannot provide.

(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?

Yes, absolutely. The regulatory framework should allow TSO's to recover efficient R&D costs. It should also encourage sharing of experiences between TSOs to ensure that lessons are not re-learnt each time a TSO encounters the same challenge. The biggest challenge may be in encouraging naturally conservative TSOs to innovate and trial new practices – there will probably be a need to relax technical standards for trials, and to allow enhanced rates of return for trialling and adopting truly innovative practices. It will be important to distinguish between truly innovative practices, and natural adaptation and change as should be expected in the normal course of a TSO's business.

Regulators can assist in helping TSOs to access additional finance – a good example being Ofgem's role in securing European Investment Bank (EIB) funds for Offshore Transmission System Operators (OFTOs).

(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?

There are several different questions here and we have addressed the key elements below as follows:

Locational charging and renewable energy

The CEER will be aware that there is a longstanding debate around the use of locational network charges. Scotland has probably the strongest or one of the strongest locational

¹ National Grid, September 2009. Accessing renewable energy. Newsletter.

charges in Europe. A recent ETSO review shows that the differential for generation plus demand is highest in GB and Norway. In GB the locational demand signals are artificially dampened and so the generation-only differential is higher than the two combined.

Furthermore some recent changes to the charging methodology targets more or less all of the cost of connecting peripheral parts of the network to generators triggering the works. Because total system costs are recovered in a 27:73 ratio this leaves all other users either untouched or better off as a result. Peripheral areas get no sharing benefit from use of system charges. It means that the more 'cost-reflective' it is for peripheral areas the less so it is for areas closer to centres of demand.

The rationale is based on providing cost differentials to allow the cost of location to contribute to decisions. Whilst this seems a reasonable approach, in the absence of any strategic direction or need, there is a wide range of options for its application. For instance in the long term there are likely to be substantial savings for consumers in accessing fuel free, domestic generation, and if locational charges pose a barrier to access then this is an inefficient outcome. Furthermore there are many instances of strategic locational decisions being made which to an extent render any generator-choice on location quite redundant. In this case a locational charge is a locational tax.

The consultation has in places statements on locational charging which would be better framed as a point of view rather than a statement of fact. Only 7 of 26 countries in Europe (and covered by ETSO) operate locational generation charging². We would question whether it is appropriate for this consultation to state, unchallenged, that *"From an economic perspective, the socially-optimal location for a particular generation project will take account of all of the costs and benefits of operation in that location (including the environmental benefits of displacing fossil fuel generation). The benefits can be approximated by the revenue of the generator, which will typically include subsidies for wind generators to reflect their environmental (and arguably security of supply) benefits. It is therefore important that the generator also takes account of the costs it imposes on the network, which can vary significantly by location. This is achieved by charging those costs to the generator."*

We feel the consultation could have been more balanced in this respect, elaborating on the pros and cons of locational versus non-locational and G=0 regimes. There are clearly benefits to non-locational regimes and it would be instructive to tease these out as well.

Demand tariffs

HIE notes that the ETSO review of network charges shows that the majority of jurisdictions charge less per unit for higher levels of consumption. This discourages energy efficiency and consideration should be given to alternatives such as rising block tariffs. An exception to this could be green tariffs to encourage consumption, perhaps specifically in areas of high renewables production.

Differentiated charges by technology

Again we feel it is appropriate to consider, where generation does see a charge, whether the charges provide the right incentives for renewables. Many support mechanisms incentivise production on a per MWh basis, and this kind of production incentive is widely seen as quite rightly promoting efficient production.

² ETSO, June 2009. ETSO overview of transmission tariffs in Europe: synthesis 2008.

The two extremes of use of system charges are a commodity charge based on usage or a capacity charge based on rated capacity. Where all users are levied a capacity charge to cover the annual costs of running the system, it tends to be relatively more expensive for low load factor plant, especially where income is per unit of energy. A pure commodity charge might on the other hand discourage production at the margins. The relative merits of each model and the potential for hybrids which for instance levied a fixed charge based on average usage should all be considered. HIE notes that these kinds of issues are being reviewed in GB by National Grid.

Understanding the charging rationale for other jurisdictions would be helpful. Perhaps CEER could assist in this respect.

System Operation charges are also relevant here, and in particular the application of the new Renewables Directive. Page 12 of the consultation quotes the new Directive in saying that "*MSs shall ensure that when they dispatch electricity, TSOs give priority to generating installations using renewable energy sources in so far as the secure operation of the national electricity system permits*" How does this sit with a self-dispatch system such as that in GB? Are operational charges which target certain locations or generators, aimed at influencing dispatch decisions, consistent with the Directive? If the assumption is always that renewables should be first on and last off, should economic signals seek to achieve this? HIE considers this worthy of some serious examination.

(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?

Wind energy presents particular challenges for infrastructure development because:

- The resource is often rich where infrastructure is sparse
- Power plant can be completed in timescales faster than supporting infrastructure. Where infrastructure is only triggered through generator requirements, this can result in the infrastructure lagging behind the generation. This is a major driver behind the new "Connect and Manage" policy in GB where plant is being allowed to connect ahead of major system reinforcements.
- Power plant can be collections of relatively small projects which, individually, do not have the financial resources for the "lumpy" investments in infrastructure that collectively, they need.

The challenges of re-wiring networks to be fit for purpose for a sustainable future are immense. It simply will not be possible without some form of planning ahead, and for infrastructure serving wind energy areas it will be necessary to parallel the development of projects and infrastructure. This suggests some form of strategic decision-making for accessing key resource areas.

It also suggests that both generators and network operators need to be responsive to each other. Generators may for instance need to size their projects according to decisions already made on network development.

(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 and we very much support work to resolve the barriers to interconnection identified. In Scotland, HIE and the Scottish Government are keenly interested in the combination of transmission and interconnection in the context of offshore renewables. The Scottish and Irish jurisdictions are currently collaborating on the ISLES project to look at the feasibility of Scottish-Irish interconnection combined with offshore renewables. Scotland is also part of the North Sea offshore grid group looking at the same issues in the North sea.

(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?

Yes, and we understand that different regulatory structures are more challenging than any differences in ownership (although the two are often interlinked).

(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?

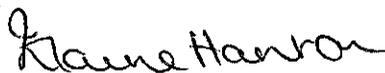
It is difficult for us to comment as we have no working knowledge of the regional initiatives run by CEER. Additional information would be helpful and we shall endeavour to further familiarise ourselves with the work of CEER. However, in so far as CEER is not a statutory organisation, we would question whether there should be a more focused work programme feeding into legislative and other formal processes. For instance, the Trans European Energy Networks initiative run by the European Commission is an extremely helpful source of strategic funds and CEER might wish to feed into the TEN work. Or CEER may wish to lobby for its own strategic fund to support interconnections which enhance the ability of individual markets to balance wind energy.

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

Compliance of individual regimes with the new Renewables Directive.

We hope you find these comments helpful.

Yours sincerely



Elaine Hanton
Joint Head of Energy