

# Responses to GB ECM-23 Part 2

## Pre-Consultation on Transmission Arrangements for Distributed Generation

Closing date: 26<sup>th</sup> February 2010

# **ECM23 Transmission Arrangements for Distributed Generation**

## **Submission by Orkney Islands Council**

### **1. Introduction**

Orkney Islands Council welcomes the opportunity to comment on this National Grid pre-consultation. It does so on the basis of its support for a growing renewable energy industry in Orkney, predominately small schemes of between one and half a dozen turbines, rated at from just under 1 MG to upwards of 3 MW per turbine. A number of these small developments are owned by community groups, and this is an increasingly popular form of development, contributing to carbon reduction from energy generation and at the same time affording a stream of income to a community in the rural and remoter parts of the community. A number of such projects are in the pipeline in addition to those already operating.

All of these projects are distribution-connected, as there is no transmission grid in Orkney, and some of the more recent or committed projects are benefiting from the active management of the distribution network embodied in the Registered Power Zone. The proposals in ECM23 could therefore have a significant impact on the cost structure of Orkney projects, including the reduction of income to community groups in vulnerable and remote locations in the County. For this reason the Council has serious concerns about the proposals.

### **2. Asymmetrical consultation**

It is a matter of concern that the level of technical complexity of the issues discussed in the consultation paper, makes it difficult for small-scale developers and community groups to fully participate in the consultation. This applies particularly to the discussion of the two alternative charging models. No such disadvantage applies to the larger generators, with whom Orkney's small-scale generators are in competition, according to the consultation paper. This makes for a somewhat asymmetrical consultation, on a matter which will have a very significant impact on small-scale embedded generators. The Council believes that greater effort should be made to make the consultation accessible to all generators.

### **3. Marginal cost of small projects**

The small-scale embedded generators in Orkney are so marginal to the electricity network as a whole, as to cast doubt on the central proposition that embedded generators impose costs on the transmission network in the same way as do transmission connected projects. The marginal cost on the transmission network of the small-scale project typical of Orkney must be imperceptible. Yet these small-scale projects are just what are needed to create a more dispersed and therefore more secure energy network. The possibility of some de minimis exception to the proposals should be considered by National Grid, one option being through a re-casting of the small generator discount.

### **4. Unstable cost structures**

The plans for existing projects in Orkney, as well as for those in the pipeline, are based on existing cost parameters, which do not allow for payment of transmission charges. It is somewhat invidious that proposals should now be made to levy transmission charges, thereby significantly altering their cost structures for the worse.

In addition, at a time when the future charging regime is under fundamental review, through RPI-X@20 and Project Discovery, it does not seem sensible to make an isolated change to the current charging regime. Those making investment decisions need a cost regime which they can count on being stable for a considerable number of years, and whilst periodic fundamental review is understandable, small changes (albeit ones with a significant impact) ahead of fundamental review are not.

Similarly, National Grid has stated that it is looking at another possible change in charges, for intermittent generation particularly from wind, and it is equally unfortunate the present proposal on embedded generation is not linked to that change, thereby reducing the number of 'tweaks' to the system – especially as these two could in many cases operate in different directions.

#### 5. Non-firm connections

A number of the small existing and planned distribution-connected schemes in Orkney have non-firm connections, under the RPZ. The imposition of the proposed charges on such generators could mean them facing the same charges as large transmission-connected projects with firm connections. In effect they would be paying for the transmission system in the same way as competitors, but without the benefit of a firm connection to the system.

#### 6. Impact on Renewables

In so far as these proposed charges would be a disincentive to the sort of small-scale generation project seen in Orkney, they would also be discouraging the development of renewable energy, since all such projects in Orkney are renewable energy projects.

#### 7. Conclusion

In conclusion, the Council believes that National Grid should not go ahead with these proposals without having a more extensive consultation with small-scale developers, enabling them to comment on a proposal which will significantly impact their cost structure; and National Grid should itself give further thought to the fairness and advisability of imposing such costs on small-scale, mainly renewable projects, which have little real impact on the costs of the transmission system, particularly in relation to the very real impact they have on small and fragile communities which have pinned their futures to small renewable energy projects.

**Orkney Islands Council  
3 March 2010**

# PRE CONSULTATION - GB ECM-23

## Transmission Arrangements for Distributed Generation

Response from the Combined Heat and Power  
Association (CHPA)

February 2010



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# Introduction

The Association welcomes the opportunity to respond to the pre consultation - GB ECM-23 - Transmission Arrangements for Distributed Generation.

## About the CHPA

The CHPA is the long-established not-for-profit trade association acting as the focus for the combined heat and power (CHP) and community heating industry in the UK. We provide support across our membership and work to establish and maintain strong and stable market conditions that are necessary to grow the application of these efficient processes/technologies.

The CHPA has over 100 members and our membership comprises of CHP/DH developers (micro, small, community scale, large-scale industrial and utility companies), manufactures, end users, suppliers, energy services companies, public sector bodies and professional services providers. Such a membership base means that we represent the majority of embedded generators and those that maybe impacted by any proposed changes to “embedded benefits”.

## Role of CHP - Now and in the Future

Combined Heat and Power (CHP) is a highly efficient process of energy conversion, which maximises the value of the energy that can be provided from a given quantity of fuel (renewable and/or fossil). The efficiency of the CHP or ‘cogeneration’ process means that the technology has the potential to deliver major benefits through reduced losses, savings in fuel consumption, reduction in carbon emissions and the optimisation of renewable/fossil resources.

There are a total of 1439 CHP schemes in the UK. Installed capacity at the end of 2008 stood at 5,469 MWe. The electricity generated by CHP schemes in 2008 was 27,911 GWh. This represents a little over 7 per cent of the total electricity generated in the UK. Across the commercial and industrial sectors (including the fuel industries other than electricity generation) electrical output from CHP accounted for around 12 per cent of electricity consumption. The carbon emission savings from CHP in 2008 were between 10.85 Mt - 14.35 MtCO<sub>2</sub>, which equates to 1.98 Mt - 2.62 Mt CO<sub>2</sub> per 1,000 MWe installed capacity respectively.

These figures are largely taken from the digest of UK Energy Statistics (DUKES). All UK CHP statistics rely almost entirely on data from the UK quality assurance programme (CHPQA). The QA scheme is entirely voluntary and applicants only apply for the scheme to claim benefits (CCL exemption, Enhanced Capital Allowances etc), this means that CHP that does not typically apply is not counted. This tends to be small scale CHP (under 1000kwe). This part of the market is an increasingly active and therefore the figures of above are incomplete and do not capture all small embedded generators.

The UK Government’s Low Carbon Transition Plan draws upon the latest set of the Government’s Updated Emissions Projections, which predict a ‘significant increase in the generation of electricity from new CHP plants’. Under these predictions, installed CHP capacity is expected to rise from the current level of 5.5 GW to 15.5 GW by 2020. This increase in capacity is estimated to contribute a total of 13 million tonnes of CO<sub>2</sub> towards the UK’s 3rd Carbon Budget which applies to the period 2018 -2022.

## Summary of our Concerns

As a leading advocate for diverse interests in the distributed generation sector we are deeply concerned that National Grid is attempting to move forward with a set of proposals which

- are premature;
- will prove directly damaging to the interests of our members, and
- will inhibit the development of decentralised energy supply.

The Government has a deliberate policy to encourage a diverse pattern of distributed power generation, evidenced through a series of explicit policy measures:

- The Renewables Obligation
- The Feed-In Tariff
- The exemptions from the Climate Change Levy for Good Quality CHP
- Enhanced Capital Allowances for Good Quality CHP
- Introduction of Local Carbon Frameworks
- Targets for Zero-Carbon Homes and Zero-Carbon Non-Domestic Buildings.
- OFGEM and DECC's (previously BERR) work to provide an enabling licensing framework for small generators.

The proposals brought forward by National Grid will have a direct impact by increasing the costs of delivering the embedded (distribution-connected) generation. Consequently the proposals will increase the costs of attaining the Government's goals for distributed and renewable energy supply and reduce the prospects that they will be met. The proposals also raise the prospect of introducing significant inefficiencies to the system, simply transferring costs between one party and the other.

## Future Role of Transmission Networks

Many aspects of this consultation depend upon a party's fundamental outlook on the role of transmission networks.

The CHPA considers that the future role of transmission networks will increasingly be to balance flows of power between distribution networks - recognising that there will be greater levels of distributed generation and higher levels of demand-side participation.

This is a very different from the position that is implicit in the consultation, which sees the Transmission Network as a legacy system that continues to manage bulk power flows, predominantly from North to South.

The consultation comes forward in the context of developing an integrated energy system that is fit for purpose in 2050:

- it is therefore appropriate that any network charging regime is consistent with the evolution to the future pattern of network operation
- and should not seek to preserve the legacy system.

We recognise, however, that the fundamental position is not yet resolved. However this consultation and the question of specific charging models are premature. This point was recently reinforced by the House of Commons Energy and Climate Change Committee who noted that decisions on *"an enduring set of arrangements should wait until it can be shown clearly that distributed generation is impacting on the transmission system....the risk of change too soon is that it may exacerbate the 'lock-in' of a centralised energy system. Central to the debate over the two options proposed by National Grid is the*

*question of whether in the future there should be separate regulatory frameworks for the distribution and transmission networks, or if there is a case for regulating the whole system as a single entity. The regulator must resolve this question first, which forms part of its RPI-X@20 review, before it can conclude on an enduring set of charging arrangements for distributed generation”<sup>1</sup>.*

Furthermore, we would stress that these are fundamental questions relating to a core component of our national energy infrastructure, with far-reaching implications for the efficient development of our wider energy system. We would be extremely concerned if the proposals were being expedited on the grounds of short-term commercial interests of one or more party, rather than long-term, strategic interests of the nation.

In this respect we are concerned that the manner in which this consultation has been carried out is inappropriate and potentially discriminatory. We will be raising these issues directly with the Government.

### **Cost Reflectivity**

Cost reflectivity is an important aspect of this consultation. We recognise that arguments of cost-reflectivity can be used to support a range of positions. For the sake of clarification, the CHPA's arguments over cost-reflectivity are borne from our view that future network charging should be forward looking, and that future network operation and configuration will increasingly be focussed on balancing of power flows between networks.

### **Summary of CHPA Position**

With the stresses that are already faced in delivering our targets for decarbonisation of energy supply and renewable energy deployment, the Association does not consider that the proposals are in the wider national interest.

Furthermore, we do not consider that the arguments for a change to the charging regime for power flows to and from the transmission network have sufficient merit to warrant the negative impacts of change. In fact quite the reverse. The proposals advanced for a move to gross charging for embedded generators:

- Are not cost-reflective
- Disregard the natural efficiency achieved through aggregation of supply and demand within the distribution network
- Are potentially discriminatory through the introduction of arbitrary thresholds, and are likely to result in perverse and inefficient outcomes
- Maybe unworkable due to the lack of knowledge about what connections are on the distribution system and at what capacity and on what they have contracted to connect
- Are inequitable in their singling out of distribution connected generation for this treatment.

We therefore consider that the proposals should be rejected on the grounds that:

- They are fundamentally inefficient
- They are not cost-reflective
- They run counter to stated Government policy objectives
- They will impose unnecessary, arbitrary and unavoidable costs on embedded generators.

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<sup>1</sup> [The future of Britain's electricity networks, Second Report of Session 2009–10](#), paragraph 163.

# Responses to questions:

## **1) To what extent are directly connected and embedded generators in competition? What evidence do you have to support this view?**

The Association does not consider that this question is relevant to the focus of the consultation.

All generators are in competition insofar as they have access to specific markets for their products and services. In this respect some generators will have inherent advantages – economies of scale, ability to use lower cost fuels, or siting that affects locational transmission charging. Where these charges are truly cost-reflective then they are appropriate.

In this respect, the core issue under consideration for the transmission network is whether the current charging regime is cost-reflective in addressing the costs of flows onto and off the system. The Association would contend that present charging arrangement is generally cost-reflective. The natural aggregation effect of distribution networks creates net flows onto and off the network that can confer a competitive advantage on distribution-connected generation, however these are no more or less appropriate than the natural advantages of geography or scale that may be exploited by other generators.

This question is erroneous and appears to be a crude attempt to move the focus of the debate away from the question of cost-reflectivity and towards an ill-defined competition criterion. This would be discriminatory towards the interests of embedded generation.

## **2) To what extent should potential future requirements to facilitate 'smart grids' influence current change proposals for DG? Could this exclude certain options?**

It is not clear how this question impacts upon the core focus of the consultation, specifically the issue of whether transmission charging should be made on the basis of gross generation or net power flows to or from the transmission network.

It is almost certain that a more dynamic management of demand, operational parameters of networks, and both distribution- and transmission- connected generation will be a growing feature of transmission and distribution grids in the future. However, many of these operational parameters will be distinct from the question of management of net power flows between transmission and distribution networks: these parameters are likely to be managed or incentivised under distinct arrangements, as is the case for STOR contracts today.

Change proposals for DG should certainly not preclude the facilitation of smart grids. However, it is not the case that treating power flows on a net basis would have this effect. Furthermore, it is unlikely that facilitation of smart grids should be a central consideration, at this stage, as to the roles that DNOs and Suppliers should take in acting as an agent for parties connected to distribution networks for transmission charging matters.

## **3) Is the methodology used to derive the 'de-facto' value of the embedded benefit appropriate? If not, can you suggest an alternative method?**

The Association does not accept that transmission charges should be paid on either the gross generating capacity or gross generation. The approach to determining the 'de-facto' value of the embedded benefit is therefore without foundation and should not be pursued further.

The Association does not accept that there is a compelling argument to amend the current arrangements for determining embedded benefits, and therefore the existing arrangements should remain in place.



**4) Is there anything further that should be considered in the relative merits and implications of the GNSAM and Net DNO Agency models?**

This question is probably premature. The principal issue to consider at this time is the principle of whether power flows between distribution and transmission networks should be considered on a gross or net basis. There then follows a decision over whether the DNO or supplier should be the agent. These issues are addressed in our response to Question 6. Only when these issues are satisfactorily resolved does the question of the relative merits and implications of the GNSAM and Net DNO Agency models become a material consideration.

**5) Which model do you think is most suitable when considering the criteria of cost-reflectivity, access allocation and commercial proportionality in conjunction with 'Grid Access' developments?**

The DNO Agency model is likely to prove most suitable – please see the response to Question 6 below.

However, in line with our response to Question 4, it is probably premature to seek to decide on any formed model when the question of charging principles for power flows to and from the transmission network remains so obviously unresolved.

**6) What are your views on whether the appropriate solution should be gross or net (or a suitable combination of both models), and whether the DNO or supplier would be the most suitable agent?**

**Gross or net solution**

The Association categorically supports the position that charging for the use of the transmission system should be made on a net basis. Specifically, the solution should take account of the net effect of demand and distribution-connected generation to determine the actual power flows between the distribution and transmission networks. These net flows should be the sole basis for transmission charging.

**Cost-reflectivity**

The flows of energy to and from a distribution network are determined by a combination of technical factors; primarily the consumption of power and increasingly the injection of power to the network, but also the physical characteristics of the network including its topology and the impedance of the various elements of the network. Together these factors establish a situation of net owner flows between the distribution and transmission network, and in creating this aggregate position no single factor can be considered to have a discrete or disproportionate impact. It is, therefore, wholly appropriate that any charges relating to the flow of electricity should be based upon this net position, both in respect of capacity and utilisation.

An attempt is made in the consultation use a marginal cost argument to support gross charging, isolating the case of an additional 50 MW of generating capacity connected to the distribution network. The argument is made that this generator could have the same impact on the transmission system as if it was transmission-connected and that it should therefore attract transmission charges. This argument in itself does not present a prima facie case for a gross charging regime, since the addition of this new generation capacity would also be recognised under a net charging regime, where it introduces additional costs on the transmission network. In point of fact the case illustrates one of the fundamental flaws of the gross charging proposals, since it fails to deal with a situation where the additional generation capacity may be met by a growth in demand that eliminates, in all or in part, any impact that the generator would have on power flows from the system.

It is apparent that a cost-reflective, net charging arrangement has the proven capacity to address the practical realities of charging in a situation that is complicated by the impact of both demand- and generation- induced power flows. There is no convincing argument presented that suggests that gross charging is a more efficient approach.

### **Boundary Issues**

The proposal to introduce a threshold, below which gross charges would not be imposed on generators, is flawed. Introduction of any such threshold imposes an arbitrary boundary, with significant cost implications for affected parties. This presents the risk that inefficient decisions will be made, most notably in sizing of plant primarily on the basis of the definition of the boundary rather than the optimum engineering arrangement for the site.

A net charging arrangement inherently avoids this situation. The avoidance of an arbitrary factor that encourages inefficient decisions is a compelling argument to adopt a net approach.

### **Consistency**

The current proposals are specific in proposing gross charging at the boundary of transmission and distribution networks. In practice there are a number of other situations where the transmission network accommodates a power flow to or from a connected entity, and where those power flows are clearly net flows arising from an aggregate pattern of generation and demand. Most obvious of these are interconnector flows, but transmission-connected trading sites and even power stations themselves would fall within these categories.

Although the latter categories could probably be addressed with relative ease, extension of the principle of gross charging for generation and demand for parties connected to the UK transmission system via interconnectors is an altogether different prospect. It is one that would rapidly be dismissed on grounds of practicality and cost, but the principle is no different to that currently being advanced in respect of distribution-connected generation in the UK.

Proposing a gross charging arrangement for distribution-connected generation, without similar treatment for these wider circumstances is at best iniquitous and at worst discriminatory. We would propose that a net charging arrangement would avoid this pitfall whilst presenting a fundamentally more simple and straightforward arrangement.

### **DNO or Supplier as Agent**

This decision must be based on practicality and efficiency.

The simple fact that the DNO is responsible for managing the physical development and operation of the network, and has the metering responsibilities and operational capabilities to monitor and control power flows through the network, points to an obvious role for the DNO as agent. It certainly confirms that irrespective of where the responsibilities of agent are placed, the DNO will be instrumental in ensuring that these responsibilities are properly executed. It is therefore vital that the DNO has the proper incentives in this respect.

It is also the case that the DNO manages physical power flows and assets, in contrast to the supplier's function which relates to the management of consumers' accounts and associated liabilities. In this respect the DNO as an entity is already a natural aggregator, better able to address the physical realities of the aggregated effect of a range of connected parties and also the wider technical attributes of the system.

Conversely, it may be the case that with the combined effect of the roll-out of smart-metering and the introduction of the Feed-In Tariff will potentially lead to a greater physical relationship between suppliers and their distribution-connected customers.

On balance we would conclude that the DNO is probably the preferred party to act as agent. We would stress, however, that this is presently a 2nd order consideration as compared to the question of charging principles.

## Further information and follow up:

As the consultation notes, we are seeking direct feedback on this response and will be seeking follow up with relevant parties within the UK Government. Any queries should be directed as follows:

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