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Dear Mr Sausman

Consultation: Enduring Transmission Arrangements for Distributed Generation

This letter constitutes Highlands and Islands Enterprise's (HIE) response to the Ofgem consultation on "Enduring transmission charging arrangements for distributed generation". The Highlands and Islands are home to much of the UK's renewable energy resource. Development of that sector is a key priority for HIE, the Government's economic and social development agency for the area, given the wealth of economic development opportunities it could offer. For that reason, HIE, and its local partners (Shetland Islands Council, Orkney Islands Council, Comhairle Nan Eilean Siar, Highland Council, Argyll & Bute Council and Moray Council) have taken a close interest in regulatory developments and have responded to a number of consultations issued by Government, Ofgem and NGC. This consultation is of particular relevance as the Highlands & Islands have:

- Some of Europe's best renewable energy resource (notably wind, wave, and tidal).
- A very high uptake of distributed renewable energy generators, particularly wind.
- The weakest transmission and distribution infrastructure in the United Kingdom (UK).
- Many examples of the problem issues cited by Ofgem in the consultation such as exporting Grid Supply Points (GSPs).
- The highest Transmission Use of System charges for generators in Great Britain.
- A very significant contribution to make to Government 2010 and 2020 targets for renewable energy supply provided the frameworks for connection and charging are correct.

HIE therefore welcomes this consultation and offers the following views which are intended to support development of a fairer system than at present.

HIE is concerned that Ofgem select the most appropriate way forward for the enduring arrangements allowing for cost efficient development of renewable energy without an overburden of regulatory changes required.

As the consultation concerns distributed (or distribution connected generation) this response does not comment on connection and Use of System charging for transmission connected generators and nor does it comment on current transmission issues such as the management of the GB generator queue for connection or the reinforcement and connection proposals and methodologies. However, all of these issues are of concern to HIE and have been the subject of previous responses by it.

Most importantly this response does not discuss the level of charging that should be passed through to distribution connected generators (as this is set at transmission level) but rather is solely concerned with the arrangements between distribution connected generation and the transmission system and its operator National Grid Electricity Transmission (NGET) and the way costs are administered.

Current Issues

Ofgem has set out within the consultation the current contractual and charging arrangements between distribution connected generators and NGET. HIE is of the view that the current arrangements are unsatisfactory for the following reasons:

1. NGET holds bilateral contractual arrangements with generators not connected to its network. HIE believes that this is not appropriate and this type of relationship should be watered down or avoided entirely.
2. The current system whereby distribution connected generators have connection agreements with both the Distribution Network Operator (DNO) and Transmission System Operator, NGET, is overly confusing and complicated for all three parties.
3. The current system creates conflicting requirements between NGET and the DNOs. For example NGET require generators to remain connected during (transmission) system disturbances whereas DNOs generally require projects to disconnect to avoid islanding issues.
4. The requirements NGET apply at the distribution connection point are not wholly appropriate. For example most current bilateral agreements specify voltage control which in many or most cases is not required or even actively discouraged by the DNO. It is the DNO's network which is most relevant, not NGET's transmission system or its requirements.
5. NGET determine Transmission Entry Capacity (TEC) according to the agreed entry capacity between the generator and the DNO. This is inappropriate and in no way reflects the extent to which the generator may influence the transmission system, i.e. the generator's output may be wholly lost within the local distribution demand or conversely might dominate export to the transmission system.

6. It is inappropriate for NGET to exercise control over projects which are embedded within the DNO network and any such concerns NGET has should be passed to the generator through the DNO to account for the DNO's own concerns.
7. Current arrangements and consultations such as "CAP 97" are seeking to extend NGET's direct influence deeper into the DNO networks affecting progressively smaller generators. HIE agrees that "all system users affect the (transmission) system" but does not believe this overlap between DNO and NGET is the correct way forward.
8. The current system of "BEGA" and "BELLA" agreements has proved confusing to generators with no clear benefits of either agreement apparent. HIE believes the intentions of the BELLA have been lost in finalising the actual arrangements and the current agreements should be merged or dropped in favour of something clear cut.
9. It is inappropriate to allocate rights to use the transmission system (e.g. TEC) directly to generators embedded in the distribution system as it is not clear to what extent they actually use it, i.e. where their power flows, what role the demand takes in using the power, and what effect they have at times of peak stress.
10. It is inappropriate to allocate rights to use the transmission system directly to generators embedded in the distribution system as this methodology does not account for the cumulative effects of embedded generators.
11. Rights to use the transmission system are allocated according to agreements which are in part determined on a seemingly arbitrary MW scale, i.e. 5, 30, 50, 100MW depending on location. This does not always reflect the actual interaction between the transmission system and the distribution system connected generation.
12. As outlined by Ofgem there are inappropriate "quick fixes" in place which show the inadequacy of the current system, e.g. the 132kV rebate for generators in Scotland.

The Way Forward

The key point of interaction between distributed generators and the transmission system is not at the generator connection point or terminals as generally reflected in the bilateral agreements with NGET in terms of TEC and technical requirements. It is at the relevant DNO GSP. It is the GSP which imports or exports to the transmission system. This is a very important point as it strongly suggests that the most sensible, efficient and practical way forward is to adopt a system based on the import and export of the GSPs rather than individual generators and hence between NGET and the DNO rather than the current tripartite system.

HIE strongly favours an enduring arrangement whereby generators contract with the DNO and the DNO contracts with NGET at its GSPs. This is similar in many ways to Ofgem's Agency approach with the DNO as the agency (item 5.46 of the consultation). HIE does however have reservations over how far this approach should be taken, particularly in respect to the market aspects.

HIE believes this approach will simplify arrangements, be more reflective of actual transmission system use, be more practical, and cost effective than the current system. HIE outlines this approach below.

▪ **TEC, reinforcement and constraint**

HIE strongly favours an approach whereby generators contract with the DNO and it is the DNO that contracts with NGET for transmission capacity as appropriate. The DNO is the best placed party to advise NGET of the import and export characteristics of its GSPs and hence is best placed to determine the actual entry and exit capacities required with NGET. The DNO is best able to estimate generation and demand on its networks and manage them appropriately.

In this scenario generators contract with the DNO and for each new connection the DNO advises NGET of the required changes to entry and exit capacity at the relevant GSP. NGET can then advise the DNO of what issues there might be and what works might be required with what timeframe. The DNO passes this through to the new generator who can then decide whether to accept the terms (which may include some form of final sums liability with either the DNO or NGET).

In cases where the transmission system is not able to provide the required change to entry and exit capability in the desired timeframe the DNO may choose to offer a “constrained” connection to the new generator. DNOs already commonly issue connection offers and agreements with constraint clauses for specific system operational conditions and operate such connections. Such a system allows NGET to continue with their existing arrangements but facilitates the increased uptake of renewable generators with what will often prove to be minimal constraint by taking the responsibility for ensuring transmission system adequacy (and constraint) with the DNO. This system could be particularly advantageous in that with the DNO employing a “connect with constraint and then NGET reinforce” policy risk of project termination and NGET holding “stranded assets” or similar can be almost completely eliminated. Such a system is simple, robust, and can be implemented now.

NGET’s concerns over a lack of control over increasing levels of distributed generation are completely addressed by this DNO Agency approach – the beauty is the simplicity which takes the burden off NGET and allows the DNO to become more pro-active with their network and managing generation on it.

▪ **Transmission Use of System charging**

The current system of charging allows NGET to recover costs from embedded generators largely regardless of the effect they have on or extent they use the transmission system. As an example a GSP could in theory neither export nor import but might contain 1000MW of perfectly matched generation and demand. Under the current system NGET

recover charges regardless but under the DNO Agency model NGET's charges depend on the GSP export and import only and hence are appropriate to the specific situation.

In more normal circumstances NGET would levy charges on the DNO, and the DNO should be allowed to pass those charges through to its generation and demand in accordance with the relative charges levied for export or import by NGET at the GSP. This charging is more accurate and cost reflective of actual transmission system use. Clearly the DNO would need to apportion the charges appropriately but this could be done in accordance with MW size and/or MWh energy and hence can be further reflective of the users characteristics and the part they play in effecting the transmission system.

It is worth noting that DNO's are well experienced in setting tariffs with various aspects such as peak usage, energy, and time of use. Such a DNO Agency arrangement thus allows for development of many more Use of System charging products than NGET offer and hence will stimulate efficient and active use of generation aimed at providing the best for the system and other users.

This system means there are no freeloaders on the transmission system since the DNO can pass charges through to all generators in proportion to use/effect and moves away from the ad hoc systems currently in place (e.g. generation largely treated as negative demand in England and Wales but not in Scotland). Freeloading is a concern specifically raised by the Ofgem consultation.

The charges passed through from NGET to generators via the DNO could be bundled in as a component of Distribution Use of System charges or kept separate depending on the ease with which this can be done. HIE is aware of the current consultation process regarding Generation Distribution Use of System charging and has responded to that separately.

▪ **Grid Code and balancing services**

The Grid Code requirements are currently passed through to embedded generators where those generators are considered large enough under the current definitions. It is the Grid Code Connection Conditions requirements that are the main burden on projects at present and there are very strong arguments against applying them regardless of generator location and size.

As an example NGET are currently requiring embedded generators to provide a full reactive capability along with voltage control on the DNO's system. These have very rarely been required by DNOs and in fact are largely unwanted as the DNOs tend to connect projects such that they can control and operate their networks satisfactorily regardless of the generator. Although this may change it is wholly inappropriate for NGET to impose requirements on projects that will never be used in practice, or, if they were, would be likely to cause unacceptable effects on the DNO system, and constitute a breach of the Connection Agreement with the DNO. In most cases it is difficult to see

what use NGET has for such requirements and how they could realistically be called upon from embedded generators to service the transmission system from such an electrically remote location, especially when they might impact negatively on the DNO system.

In cases where NGET require reactive provision it should be provided by the DNO at the GSP. The DNO can achieve this by contracting with generators appropriately placed to provide it, in contrast to NGET's current approach. HIE notes that this approach has been proposed in Denmark.

Another example of conflicting requirements is the fault ride through capability specified by NGET and discussed earlier.

Other NGET requirements are however reasonable, such as frequency response which should have little impact on the DNO system other than to assist frequency recovery. However, even here its application needs some consideration – is the application of frequency response to generators as small as 30MW really necessary when considering frequency on a GB scale? HIE considers that the balancing service of frequency response needs further consideration in its application but is sensible for some larger embedded generators. How frequency response is contracted by NGET needs further consideration.

It is clear that the current passing through of Grid Code requirements to distributed generators is in need of revision. It is currently leading to conflicting requirements, and additional equipment, time delays, and provision of capabilities which will never be used. This is acting as an impediment to the uptake of renewable energy and other embedded generators, is inefficient, not cost-effective, and inappropriate. HIE believes that NGET is largely passing through unnecessary requirements and those that need to be passed through could easily be done so via the DNO where they can also be confirmed as appropriate. HIE notes that Grid Codes in other parts of the world have this flexibility (e.g. USA).

▪ **Bilateral Agreements with NGET**

HIE is of the opinion that the current system of BEGA, BELLA and LEGA should be dropped or replaced with a single simpler bilateral agreement. With the DNO Agency model this is appropriate since the DNO can be solely responsible to NGET.

If felt necessary then NGET need only have an agreement with embedded generators for a few items:

- Services, e.g. frequency response, where the DNO need not be overly concerned, although this could be contracted via the DNO or another agency.
- Transmission works, although this could be passed through by the DNO

▪ **Equality with demand**

Many of the principles outlined above can be equally applied to demand and new demand customers. HIE sees this as leading to further equality in the way demand and generation are treated, and since the above DNO Agency approach appears to hold many advantages then these are also rolled out to demand consumers (or suppliers).

▪ **Size definitions**

Current definitions of small, medium and large generators vary across GB. For distribution connected generation the importance of these definitions is greatly diluted if a DNO Agency approach is adopted. In such a case they are meaningless in terms of the general arrangements and charging regime and can probably be removed. The only remaining relevance is in defining a few technical capabilities that may be required such as frequency response or fault ride through. HIE is of the opinion that a single MW limit or an alternative market approach could probably be developed for provision of these services. HIE has provided comment on these somewhat arbitrary size definitions elsewhere within this response.

▪ **Market aspects**

HIE has not considered market aspects that could be applied to the DNO Agency approach. At this time HIE considers the important issues largely lie within the “system operator” aspects of the DNO Agency approach and that these offer clear benefits. HIE does however have some reservations regarding extending the DNO’s responsibilities beyond system operation and considers that this would be a subject for a further consultation should the DNO Agency approach be adopted.

Summary

HIE believes the arrangements discussed herein with the DNO Agency approach are simpler than the current arrangements and better able to address the issues with the likely future increase in distributed generation:

- The overlap, conflict and confusion, of NGET with DNOs is removed with NGET’s responsibilities are withdrawn back to the transmission system where they belong.
- The delineation of boundaries of responsibility is clear and leads to robust working arrangements.
- Contractual arrangements for all parties (NGET, Generators, and DNOs) are straightforward, and the current tripartite arrangement with overlapping responsibilities and confusion is removed.
- DNOs retain full control over their networks and are incentivised to use them better.
- “Arbitrary” size definitions, rebates, and other ad hoc fixes can be avoided.
- Issues with TEC, transmission system reinforcement and constraint are simplified, with DNOs in a position to connect projects ahead of transmission system works

avoiding issues with “final sums” and “stranded assets”, and allowing a more rapid and flexible uptake of distributed generators.

- Charging becomes simplified, and more reflective of actual transmission system use.
- Issues with the Grid Code can be revised with only the necessary requirements passed through.

We hope you find these comments useful and look forward to hearing the results of this consultation in due course.

Yours sincerely

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