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Connection Arrangements for Offshore Renewable Generation Consultation

Dear Mr. Mulhern,

In October 2012 The Crown Estate awarded two separate Agreements for Lease (AfL) for the development of two 100 MW Tidal Energy Parks located on the north coast of County Antrim in Northern Ireland. Due to the close proximity of the two projects they may share onshore grid connection assets. As the two projects have similar grid challenges, the developers of the two projects have prepared a joint response to this consultation.

The developers and their respective projects are detailed as follows:

Tidal Ventures Ltd (TVL) is a joint venture between Bord Gáis Energy and OpenHydro Technology Ltd. TVL proposes to develop a 100MW tidal energy park in the waters offshore of Torr Head.

The DP Marine Energy and DEME Blue Energy development consortium (DPME/DBE) hold an AfL for the development of a 100 MW tidal energy park in the waters offshore of Fair Head.

As part of the AfL agreements with the Crown Estate there are major milestones before 2020 where the consortiums are required to provide evidence of project funding and commencement of construction works.

A significant risk to the delivery of both projects is associated with access to the grid and the current uncertainty relating to the grid connection process and associated planning issues. We welcome this consultation which we hope will provide greater clarity to this process.

Detailed comments are provided below on the relevant sections within the consultation paper.



Comments on Section 5 - Options for Physical Connection Arrangements and Wider Transmission System Reinforcements

The two tidal projects will have a combined Maximum Export Capacity (MEC) of 200MW. As indicated above, the two projects are in close proximity to each other so it is likely that they may share onshore connection assets. For technical reasons the two projects are likely to connect the offshore turbine arrays at a distribution voltage and bring the power onshore with multiple cable circuits. At an onshore substation the power will be transformed from a distribution to a transmission voltage, for connection to NIE's transmission system. To connect 200MW of generation one or two 110kV circuits will likely be required from this substation(s) to a suitable point on the NIE transmission system. The detailed connection method will be determined by SONI and NIE as part of the connection offer process.

Critical to our response for this consultation is the assumption that the connection assets for these two tidal projects will not be subject to the IME3 unbundling rules. Taking the guidance from the consultation paper and from discussions with other stakeholders we do not believe that these connections are subject to the IME3 unbundling rules. We understand that these rules apply to generator connections which could form part of a transmission system. Although it is likely that the tidal projects will have an onshore connection at transmission level (110kV), there will be a transformer in close proximity to the connection point, reducing the voltage to distribution level. The internal network from the onshore substation, to the landing point and then offshore to the tidal turbines will all be at a distribution voltage. We note that similar connection arrangements are in place for onshore transmission connected windfarms and we understand they are exempt from the IME3 unbundling rules. In the unlikely event that later in the consultation process the Utility Regulator decides that the IME3 unbundling rules will apply to the connection arrangements described above we would request the opportunity to further review and comment on the implementation of the IME3 unbundling rules.

We note that in section 5.2, in relation to the 600MW offshore wind connection, there is reference to a 20km maximum length limit for a single connection circuit. It is our understanding from reviewing the PLM-SP-1 standard that this limit applies only to "Supergrid Connected Generators", i.e. 275kV connections and above. For generators connected at 110kV these limits will not apply. It would be important that any change from the existing PLM-SP-1 standard as part of NIE and SONI's review does not extend the 20km limit to 110kV without substantial justification and analysis. We also expect that the NIE and SONI's review of the planning standard will include consultation with industry on any proposed changes.

The review of the planning standards does create an opportunity to consider the potential benefits of new technology. This includes the availability of new overhead and cable technology which achieves higher ratings without increased environmental impact. Since the standards were developed in 1975 and adopted in Northern Ireland in 1992 there have also



been substantial developments in the area of smart grid technology. We would therefore request that NIE and SONI consider technology improvements as part of any future review.

We are not providing comments on section 5.4 as it applies to generators with offshore transmission connections.

We welcome that the Utility Regulator recognises in section 5.5.1 the potential opportunity for a connection onto the local distribution network for the tidal generation projects. This will be important for facilitating an early phase of the tidal generation although we note that this option will only allow a limited capacity of the total 200MW to connect. This early phase will also be important for supporting the further development of the local supply chain and progression of the R&D work for marine energy. It is important for policy makers to fully appreciate the limited time window available for Northern Ireland to establish itself as one of the world leading jurisdictions for the demonstration of tidal technology.

Section 5.5.2 describes the likely connection arrangement for the 200MW of tidal generation. As is similar with tidal generation sites in other jurisdictions, the Torr Head/Fair Head sites are remote from the existing transmission network. The nearest existing 110kV substation is 35km from the tidal sites. It is also possible that NIE and SONI may determine a connection to another substation further away from the site as the preferred connection method. In considering connection policy for the offshore tidal projects, it should be recognised that there will be a substantial quantity of new transmission infrastructure required. Mitigating, where possible, these connection risks will be a critical part of the policy framework required to ensure the successful and timely delivery of these projects.

The two tidal consortiums fully support the proposal as described in Figure 6 and Table 4 of Section 5.5.2 for the developer to design, own, operate and maintain the offshore connection assets up to the connection point at the onshore substation.

In section 5.6 it is discussed that alternative connection arrangements should also be considered. We support all potential connection arrangements being considered to ensure that the optimum connection method, costs and timelines are achieved. However alternative connection arrangements should all be considered at an early stage of the connection offer process so that there are no unnecessary delays in the delivery of these connections. Although connection cost is very important it is often the connection timeline which is the critical grid related issue in renewable generation projects. The connection options considered have to have a strong focus on timeline and any proposed future proofing should in principle not introduce additional timeline risks to the projects.

Comments on Section 6 - Ownership, Responsibilities and License Arrangements

We are not providing comments on sections 6.1-6.3 as it applies to generators with offshore transmission connections and is related to IME3 unbundling.



For offshore connections at distribution voltages (section 6.4), we fully support the proposal for the developer to finance, design, own, operate, maintain and decommission the offshore connection assets up to the connection point at the onshore substation.

Comments on Section 7 - System Security, Least Cost Technically Acceptable (LCTA) Connection Design, Cost Allocation and Charging Arrangements

As the majority of Section 7 is also focused on offshore transmission connections we have only commented on the relevant sections to 110kV connections with distribution offshore assets. We note that the majority of the connection design and charging arrangements for onshore transmission connections assets have already been established during the introduction of the all-island Single Electricity Market. We would agree with the Utility Regulator that there is no need to review the general connection and charging principles as part of this consultation.

Outside of the general principles it is probably timely to review other aspects of connection policy. This includes the introduction of contestability for shallow connection assets. It is noted that the development of contestability has been included in the Utility Regulator's 2013 work plan. Considering the scale of new connection assets required for these projects and the importance of connection timelines, contestability will be a very important mechanism for managing connection costs and timeline risks. For contesting connection assets for these projects to be a viable option it is critical that the contestability policy and rule-set is fully introduced during 2014.

We also note that annual transmission O&M charges are still 2% of the connection cost. Considering the recent reduction of the distribution O&M charge from 2% to 1.2% we believe that it is timely for NIE, SONI and the Utility Regulator to review the transmission O&M charges.

Comments on Section 8 - Changes to the Connection Application Process and the NI Connection Queue

The two tidal consortiums consider that other forms of generation, in particular tidal energy, should be allowed to enter the FAQ allocation process and make an application for connection based on permissions other than the receipt of Planning Approval. We believe that a reasonable threshold for making a grid application and for inclusion in the FAQ allocation process, in the case of tidal energy, is the signing of an AfL with The Crown Estate.

We also strongly believe that it is important that the firm access is allocated along with the connection offer. At all stages of the connection process firm access is a key consideration. If firm access levels are not considered during the connection offer process it will not be



possible to properly assess the different connection options. It will be difficult to assess any connection offer without firm access information and the early phases of financing the project will be hindered by the lack of firm access information.

The detailed reasons for tidal generation receiving a connection offers and FAQ at the signing of the AfL are detailed below.

Commitment to Project

If the purpose of having a minimum requirement before a connection application will be accepted is primarily to test commitment to justify entrance to the FAQ listing, we consider that the competitive process for obtaining the AfL with The Crown Estate signals a significant commitment. The competitive tendering process for the AfL was assessed against a number of key principles which are set out below:

- the Bidder's commitment, ability and resources to deliver the project;
- the demonstration of a strategy for successfully achieving consent and safely constructing (or having a clear path to enable the construction of) the Project to programme;
- the appropriateness of the Development Site sought when considered against the capacity which is to be installed at each phase of the proposed development;
- a lack of conflict between the proposed Project and other uses of the Development Site and
- the ability of the Bidder to fund development of the project within the context of its existing financial commitments for other projects

The competitive nature of the tender process required that significant time and financial resources were invested in investigating the potential tidal development sites, preparing the tender application for the recommended site and a significant fee was required to be paid upon award of the AfL. This is a similar level of commitment to what would be expected of an onshore wind farm planning application. The tender process for the awarding of offshore development rights is controlled by The Crown Estate and the Northern Ireland government which prevents any potential for speculative applications due to the policy driven nature of allocating AfL's.

Policy Context

The currently licenced tidal development sites off the north coast of Antrim have also been through an SEA process and have been deemed to be generally suitable for the development of tidal energy generation subject to a more detailed project specific environmental impact assessment.

In the DETI Offshore Renewable Energy Strategic Action Plan, DETI explicitly states that it wants to optimise the amount of offshore resources to enhance security of supply and diversity. The plan also provides that DETI and industry must look to increase deployment



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of newer technologies to reduce the cost of commissioning offshore tidal and wave energy generators and to make them more commercially competitive in the medium to longer term. Finally it also says that they (DETI) will work with NIE, SONI and the UR to facilitate the development of the NI Grid to take offshore energy.

DETI's action plan for offshore energy points in the direction of offshore renewables being different to onshore and that in order to promote diversity and security of supply they need to help increase deployment to make them more commercially viable.

NI Government Strategic Energy Policy, as set out in the Strategic Energy Framework 2010, is to achieve 40% renewable electricity in the supplied energy mix by 2020. As well as obviously improving environmental sustainability, one of the key objectives is to provide future energy supply security. If renewable energy is to provide 40% of the energy mix, then the renewable quota itself must be made up of a balanced and complimentary portfolio of generation sources and technologies. Tidal generation will have an important role to play in this, with the distinct advantage of providing energy from a resource that is entirely predictable and consistent.

In this context it is worth highlighting that the policy environment is supportive of initiatives needed to progress deployment and reduce the commercial costs of tidal and wave technologies specifically.

Planning Process

One significant difference between onshore wind and offshore tidal energy developments is that there is much more certainty regarding the process for achieving planning permission for onshore wind. Whilst a significant effort has been made to date to streamline the process for offshore generators, it is still a process that has not been tested and there are a number of different licences and consents that need to be obtained. This uncertainty increases the risk of delays in achieving full planning permission for a tidal energy project.

It would unduly burden off-shore developers if it was required to obtain all the additional consents prior to a connection application submission which would confirm whether or not a viable grid connection existed and inclusion in the ITC run for determination of FAQs. This is particularly acute for tidal developers because of the already increased financial risk due to the infancy of the industry.

If the connection application submission is delayed until after all additional consents for the off-shore assets are obtained, the impact on the critical path timeline for the delivery of the projects will result in it being unlikely that the projects will contribute towards the 2020 renewable targets.



Economic Considerations

The technology required to generate electricity from tidal energy on a commercial scale is still in development and potential investors at construction stage therefore need to have more certainty regarding potential revenue. While it is accepted that all electricity generation technologies will need a minimum level of certainty regarding access to the grid, this will be a more significant barrier for a technology at an early stage of development i.e. tidal energy.

The consultation also acknowledges that there are different and additional consents required for off-shore projects. Due to the nature of off-shore projects, the cost of the environmental assessments and other surveys are significantly higher than they would be for an equivalent on-shore project.

Development of Connection Policy

We understand that there are conflicting views across the renewable industry in Northern Ireland on the connection arrangements for offshore renewable generation. However we do not believe that it will be possible, or indeed necessary, for the Utility Regulator to be consistent across all renewable technologies on some of these issues. It is generally understood that for some policy decisions renewable technologies are treated differently as the technologies and industry sectors are at different stages of the development cycle. This can be clearly seen in the price levels set by Government for support schemes and the allocation of other support by state bodies such as R&D funding. To enable and facilitate the emerging marine renewable industry there may have to be instances where connection policy will have to differ from the policy being applied to onshore renewables.

It is worth repeating in this context that we consider that the work required to obtain an AfL represents a significant commitment to the development of a project, similar to the award of planning permission for onshore generation.

Unique Benefits of Tidal Energy

The proposed tidal energy developments that have AfL's signed with The Crown Estate, with a combined export capacity of 200 MW, will make a significant contribution to the Northern Ireland target of 40 % of energy generation from renewable sources by 2020. In addition to this, Northern Ireland has the opportunity to be world leaders in the utilisation of tidal and the benefits that the diversity of the technology brings to the overall generation portfolio.

Some of the unique benefits of tidal energy are set out below:

- improves grid management because the electricity produced is entirely predictable for years in advance
- has a different generation profile to wind energy which will allow a higher penetration of renewable generation
- higher level of diversity of renewable generation type available on the system



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- generally accepted to have a low human and environmental impact
- relatively small footprint compared to other renewable technologies
- potential to capitalise on the wider benefit by extending its R&D expertise in this field and securing its position in the future supply chain.
- due to the stage of development of the technology, locations where early deployment is successful will result in comparative advantage to local businesses involved in the development and will attract scientific interest.

Considering the time critical aspect of the tidal projects receiving a connection offer we would request this section of the consultation is resolved in advanced of some of the more technically complicated sections.

Comments on Section 9 - the need for changes to the Grid Code

As a tidal energy park will be a new type of generator connecting to the transmission system there will be the requirement for modifications to the Grid Code. As this is primarily a connection policy consultation it does not appear to be appropriate at this stage to get into the level of technical detail required for a full response on the required changes to the Grid Code. The Grid Code Review Panel is also established to manage the development of the Grid Code. We would propose that a working group reporting to the Grid Code Review Panel is established to investigate and make the recommendations on the required changes to accommodate offshore generation, including tidal energy parks. We would also request that a tidal generation representative be included on the Grid Code Review Panel.

In conclusion we welcome the Utility Regulators timely consultation on connection policy for offshore generation. In order to capture this time benefit we would respectfully request that the next step is for the regulator to move to a decision on the key connection policy issues for offshore generation.

Please do not hesitate in contacting us if you have any queries or wish to discuss this matter further.

Yours sincerely,

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