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5 May 2017

Dear Sir or Madam

## **Targeted Charging Review: a consultation**

Eishken Limited is pleased to have the opportunity to respond to the above consultations.

Eishken owns an estate on the Isle of Lewis where it has developed the consented 162MW Muaitheabhal windfarm project located on its ground. After successful development of this project by Eishken, including seeking and gaining Section 36 consent, EDF have now agreed to take the project forward, with Eishken receiving rental income. Eishken has also developed plans to build a 300 MW pumped storage hydro facility adjacent to the wind farm, with 8 hours storage (equating to ~2.4 GWh). AECOM, the international infrastructure design and engineering consultancy, is advising Eishken on the technical aspects of the project, which could be operational by 2021. The construction of the pumped storage is dependent on the construction of the Western Isles HVDC link, and would allow for better utilisation of this link and for variable wind power to be stored.

We are therefore responding to the relevant questions in this consultation in respect of wind and pumped storage hydro projects on the Scottish Islands connected to the transmission network.

*Question 1: Do you agree that the potential for residual charges to fall increasingly on groups of consumers who are less able to take action than others who are connected to the system, is something we should address?*

We believe that residual charges should take account of how a particular user makes use of the transmission network. Charges should take account of any benefits the user may bring to the network.

The Eishken pumped storage hydro facility on the Western Isles offers an opportunity to connect clean renewable technologies, balanced and controlled by pumped storage hydro, all connected by controllable HVDC directly into an important node on the mainland transmission network in Scotland. This will be a truly smart part of the network and will offer an excellent opportunity to learn and optimise how such a flexible system can be optimised, and used as the basis of smart networks in the future.

We need this capability to be recognised. Transmission charging needs to encourage this type of connection, and not discourage it, to help ensure that opportunities like the Western Isles are not lost.

*Question 2: If so, why do you think, or do not think, action is needed?*

If a new storage project can bring benefits to a network then it should be encouraged through favorable charging, and not incur charging arrangements that could serve to prevent the new storage project going ahead.

*Question 3: We are proposing to look at residual charges in a Significant Code Review. Are there any elements of residual charges that you think should be addressed more urgently? Please say why.*

Yes, clarity on storage is required urgently to help unlock the pipeline of projects. If storage is not progressed, then opportunities to reduce network operator costs, and therefore consumer costs, will be lost.

*Question 7: In future, which of these parties should pay the transmission residual charges: generators (transmission- or distribution-connected), storage (transmission- or distribution-connected), and demand, and why? What proportion of these charges should be recovered from each type of user?*

As distribution residual charges are paid for by demand alone, it would seem appropriate for transmission connected demand to be treated in the same manner. As transmission connected demand currently pays the majority of transmission residual charge then removing residual charges from transmission connected generation should not cause any significant distorting of current charging arrangements. As set out below we believe that storage should not incur demand residual charges.

*Question 10: Are there other options for residual charges that you think we should consider, and why?*

We feel there is an argument that where storage can be used as a tool to reduce the costs of balancing the system then this should be reflected in the transmission charges levied. This is discussed further in our answer to question 15 below.

*Question 15: Do you think there are other aspects of transmission or distribution network charging which put smaller EG, or any other forms of generation or demand, at a material disadvantage?*

Yes, we believe that where storage can play an active role in the reinforcement of a network, then this benefit should be reflected in the charges levied on the storage provider.

At present the Western Isles is supplied via a 132kV transmission line connected to the mainland transmission network at Fort Augustus via the Isle of Skye. This circuit is connected to an aging 33kV, 22MW subsea cable to the Western Isles. Currently the maximum island demand is circa 27MW, the shortfall in the connection capacity being met by diesel generators on the island. This infrastructure is in need of reinforcement and replacement, and the remote nature of the Western Isles means that any replacement infrastructure will be expensive.

The pumped storage facility on the Western Isles could be used to help manage the requirements on the island, and could, therefore reduce the level of required network reinforcement. The pumped storage facility could be factored into the design of any new connection to be installed, reducing the network reinforcement and replacement requirements and saving costs.

The implementation of the Western Isles Link would connect the new generation of the island, it would also provide additional capacity to supply the existing demand on the island, and the security of supply would be improved, providing an additional cable link. In addition, the HVDC converters to be used in the Western Isles Link will provide very controllable reactive compensation capability which will provide system benefits at both Beaulieu, an important transmission hub on the mainland, and also on the Western Isles.

The pumped storage, together with the Western Isles Link, will provide significant benefits to the transmission network and will serve to benefit the Western Isles themselves, improving the quality and security of supplies in these remote areas, providing capacity to facilitate island demand growth, and relieving reliance on local carbon standby generation. The new arrangements will relieve the heavily congested circuit to Skye, with demand being transferred to the new link.

However, the current transmission charging arrangements would see all the costs of the new connection infrastructure passed to the island generators, who would therefore be paying not only for their own connection, but also wider benefits to the network, including reinforcing the existing demand on the island.

Where the storage facility, including the network infrastructure required to connect the storage facility, is used to benefit the network and offset the need for system reinforcement, then the avoided costs of the reinforcement could be excluded from the calculation of the local TNUoS tariff, and the residual element could be reduced/removed from the wider TNUoS tariff.

*Question 16: Do you agree with our view that storage should not pay the current demand residual charge, at either transmission or distribution level?*

Yes, we agree that storage should not pay the demand residual charge. Storage has the capability to both generate when needed, and consume electricity when needed. The controllability of pumped storage hydro serves to complement intermittent renewable generation, such as wind, marine and solar, and reinforce the networks to which it is connected. Storage provides flexibility, reduces reliability on fossil fuel generation, and maximises the use of renewable generation.

Storage needs to be classed in such a way to recognise that it is an asset that can be controlled. Its unique capability, and the benefits it can bring, must be recognised as a distinct asset class which can deliver benefits to the network, and, ultimately, save money for the consumer.

Avoiding demand residual charges will help, but it is essential that the overall charging recognises that storage can contribute to system security, avoid the need for reinforcement, maximize the use of the network and reduce the costs of balancing the network.

*Question 17: Do you agree with our view that storage should not pay BSUoS on both demand and generation?*

Yes, storage should not be double counted in respect of BSUoS. The technical characteristics of storage mean it can operate as a generation asset and end user demand asset. The application of BSUoS needs to reflect this controllability and the benefit to the network, including its ability to generate when required or consume electricity as required. As a minimum, storage should only be

required to pay generation BSUoS. As discussed previously we feel there is an argument that where storage can be used as a tool to reduce the costs of balancing the system then this should be reflected in the transmission charges levied.

*Question 18: Which of the BSUoS approaches describe is more likely to achieve a level playing field for storage?*

Of the approaches described we would define the BMU as exporting, and charge BSUoS on the basis of net exports.

*Question 19: Do you think the changes in this chapter should be made ahead of any wider changes to residual charging that may happen in future? Do you agree with our view that these changes should be implemented by industry through the standard code change process?*

For storage – yes, this needs to be clarified as soon as possible. Large scale storage is needed urgently, we need to unlock the pipeline, especially of large scale pumped storage hydro projects. Clarity on charging is an important aspect to enabling the implementation of storage projects.

Yours faithfully

A handwritten signature in black ink, appearing to be 'Nick Kay', with a stylized, cursive script.

Nick Kay  
Verbeia Energy Limited  
On behalf of Eishken Limited