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Anna Rossington
Distribution Policy
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Dear Ms Rossington,

Shetland Northern Isles New Energy Solutions (NINES) Project

The Institution of Engineering and Technology is pleased to endorse the proposal to go ahead with the Shetland Northern Isles New Energy Solutions (NINES) Project, as described in the consultation document. Our responses to the formal questions follow:

Question 1: Do you agree that NINES can potentially reduce the cost of ensuring a secure, environmentally compliant electricity supply compared with the option of replacing Lerwick Power Station (LPS) with a like-for-like power station?

Lerwick power station currently comprises diesel engine and gas turbine units, which is standard technology for small islands worldwide. Typically this results in high costs of generation, and furthermore the plant is life-expired and needs to be replaced.

The NINES project proposes to reduce the amount of replacement capacity required at Lerwick through developing a range of innovative smart grid solutions. There may also be an upcoming HVDC interconnector to Shetland as part of the Viking offshore wind project.

Whilst we are strongly in favour of the NINES project as a demonstrator for smart grid technologies, the estimation of potential cost saving is less clear cut because other factors are changing too. The provision of an HVDC interconnector in the future would reduce the load factor of the diesel generation to very low levels, with concomitant fuel savings. There are also other emerging fuelling options for island generators such as containerised LNG which are being explored in other island power systems at the moment, which might offer major fuel cost reductions and improved environmental performance. It is understood the use of novel demand side response techniques to balance increasing intermittent generation sources may offset these concerns. It will require complex analysis to clearly identify which elements actually generate any cost savings and to what level of contribution.

Question 2: Do you agree with our proposal to change SHEPD‟s licence to enable the NINES proposal to be submitted as a part of the Integrated Plan?

Yes

Question 3: Do you agree with our proposal to finance NINES using a totex approach and to classify it as Integrated Plan Costs?

The IET wishes to encourage Ofgem to continue to engage in special cases that fall outside LCNF and similar funding frameworks. We agree that trials such as this are important and can justify allowing modest extra consumer costs being passed through**.**

We make no detailed comment on the regulatory arrangements for funding the scheme but would be concerned if a disproportionate cost were to fall to the people of Shetland for a scheme much of whose value is to the UK more widely. We understand that the cost in this instance is to be spread across the Scottish Hydro Electric Power Distribution (SHEPD) area resulting in a proposed one off cost of £20 per household.

We would caution that this should not be regarded as a precedent for the way funding is provided for the upgrade of the UK distribution network more generally (i.e outside specific trials).

Question 4: Do you agree that the risks to the project have been mitigated, and that the potential benefits from the project outweigh the risks?

Yes. This is a development with innovative engineering content and should provide lasting value to the people of Shetland. Additionally the project has an element of strategic importance as Shetland, being an island, magnifies the power system operational challenges. It can be argued to be a microcosm for GB developments (i.e. a yet bigger island). Given this is a golden opportunity to understand the benefits of a systems approach to design of a Smart Grid a key element should be to understand the level of contribution from each element and the loss of benefit to the whole system should that element be unavailable. This valuable information will be key for others to construct robust business cases for eventual role out.

We note from paragraph 2.4 that the project includes:

- modelling to better understand demand and supply on Shetland
- a 1MW battery for energy storage
- domestic demand side response
- additional "flexible" demand through a 130MWh thermal water store and
- 4MW electrical boiler forming part of the district heating scheme
- connection of more renewable generation
- Active Network Management (ANM)
- system learning relating to customer behaviour

This combination of active network management, flexible demand, storage and customer behaviour will provide very valuable learning by doing and study data. This will have relevance to future development of smart grid in the UK more generally.

Because there would be a clear benefit to the UK as a whole from wide dissemination of the learning from this project, the IET recommends that Ofgem consider adding a condition that the engineering learning points should be made widely available to other DNOs and the industry more widely not just to project participants. (For Low Carbon Network Fund (LCNF2) projects this is a standard requirement and the costs are shared by all GB customers, not just those served by the relevant DNO.) In order to provide this level of knowledge sharing, the likely costs involved should be carefully considered and the need for

clarity from the outset for assignment of IPR and know-how generated during the project should be addressed as part of the initial agreement.

While the costs of NINES are being met by SHEPD's customers, it is in their interests to have this information socialised as it is likely to bring them benefits in the long run as a) it encourages two-way information exchange, and b) it may promote developments elsewhere that will 'return to the SHEPD area' as further cost-effective solutions in the future.

This response has been prepared on behalf of the IET Board of Trustees by the IET's Energy Policy Panel in consultation with energy experts in the IET Scotland Policy Panel.

Please let us know if we can be of any further assistance.

Yours sincerely

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