

Offshore Coordination project

Consultation feedback form

We launched our consultation on **30 September 2020** and it closes on the **28 October 2020**.

Please use this form to send in your written feedback. If you would like to feedback via this route. We are also working with stakeholders to receive verbal feedback. Please contact us if you would prefer to provide feedback verbally.

We would like to publish responses to our consultation following its closure. Please can you confirm whether you would like us to treat your response confidentially by selecting one of the options below: (delete those that do not apply)

- ~~Confidential – please do not share the feedback or company~~
- ~~Confidential – you can publish the feedback without our name or sector included~~
- ~~Confidential – you can publish the feedback without our name but you are welcome to identify which sector we come from~~
- **Non-confidential – you can publish the full response**

Throughout the consultation document we have asked some questions on our three reports that we would like your feedback on to shape our final documentation. These are below and do not need answering if you do not have views. If you would like to provide any other feedback, please feel free to do so.

Holistic Approach to Offshore Transmission Planning Report

Q1. Do you agree with our assessment of the key technology and system risk barriers coming from the Holistic Approach to Offshore Transmission Planning Report?

Yes, this reply pertains to Table 5-1. Specifically, the recommendations titled, "Update regulatory framework rules for development of offshore grids" and "Standardization of offshore infrastructure."

Q2. Do you have any proposals on how to most effectively bring the technology to market for when needed?

The scope of this reply is limited to the safety of lithium Ion battery energy storage systems which may be used as part of the overall project as discussed in Section 5.6.3 and 3.1.1.1.5 of the Planning Report.

These energy storage systems provide many valuable use cases on the grid such as that mentioned in Section 5.7.1.1 but have been known to pose a unique fire risk based on the flammable potential of the Individual battery cells. Stationary energy storage battery fires have occurred in utility connected system including at an Engie site in Belgium (2017), multiple KEPCO sites in South Korea (2018-2020), Arizona Public Services site in the US (2019) and an Orsted operated battery in Liverpool, UK (2020).

Many of these fires are still under investigation with respect to the root cause. In some cases, the root cause is contested among multiple parties. Codes and standards governing these systems are still in their Infancy stages and are continuously evolving. It is Imperative that these battery systems are installed safely in order to maintain the reliability and resiliency of the systems which depend on their operation.

Early gas detection systems (i.e. off-gas detection systems) have been studied and independently verified to provide an important safety barrier that is capable of shutting a part of the battery system down before a fire occurs in the system.

Requirements to include off-gas detection systems are being considered by codes and standards committees but are not yet in place (as alluded to in the references listed from Table 5-2). However, many utilities across the globe have already specified the use of off-gas detection and it is becoming an industry best practice to be included.

We believe that off-gas detection should be included in the specifications for National Grid UK's Offshore Coordination project in order to most effectively bringing this technology to market. We would be happy to take the opportunity to discuss with this the appropriate subject matter expert on this project.

Q3. Do you have any additional evidence to inform the assessment we have made?

I have attached two documents to this submission:

(1) A White Paper titled, "Promising Outlook for Lithium-ion Battery Technology - Once Risks are Addressed", written by a subject matter expert at Burns McDonnell, a battery EPC company based in the US. This white paper concludes the following:

"By detecting the damage before the thermal process begins, off gas detection systems may be one of the only external protective devices available today that can effectively prevent thermal runaway."

(2) The final report from a two-year study conducted by DNV GL regarding lithium ion battery safety for the maritime industry. The purpose of this initiative is shared in the open sentences of the report:

"This report is intended to enable persons assessing energy storage installations, whether from a design, engineering or regulatory perspective, to better evaluate risks, capabilities and solutions with regard to safety. The focus and context are on installations in the maritime environment although most findings will apply similarly to other applications and industries."

The intent of the effort was to validate the effectiveness of safety measures such as off-gas detection provided by Li-ion Tamer. Conclusions about the effectiveness of off-gas detection are summarized in the excerpt below:

"...LEL sensors and voltage do not provide a mechanism for early warning. In comparison, the Li-ion Tamer sensor indicates only seconds after off-gassing occurs. In addition, testing was performed where a cell was being overcharged and charging stopped when off-gas was released as indicated by the Li-ion Tamer. The cell temperatures ceased to increase, and off-gassing started to decline until the cell was considered stable. Thus, demonstrating it is feasible to 'pull back' a cell after it has begun off-gassing but before thermal runaway occurs. Meaning early detection, coupled with correct system shutdown measures is an important safety barrier."

Q4. Do you have any further feedback on the report?

Cost-benefit Analysis Report

Q1. Do you agree with our assessment of the costs and benefits?

Q2. Do you have any other evidence to support or challenge the assessment made?

Q3. What do you see as the potential impact on the environment of these proposals, particularly the reduction in the number of assets and landing points?

Q4. Do you have any further evidence on the potential social and community impacts of these proposals? We would particularly welcome responses from local authorities on this question.

Q5. Where do you see value for further work to build on and test these findings? Either from the proposed list or beyond?

Offshore Connections Review Report

Q1. Do you think that if the areas we are highlighting were improved, that the ability to coordinate projects would be significantly increased?

Q2. Do you think we have missed anything in our offshore connections review that would add value and increase coordination?

Do you have any other feedback, if so please add below. Many thanks for taking the time to provide written feedback. When we publish our final documentation, we will let you know what we have done with the feedback and how it has shaped our work.