nationalgridESO

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)

Non-confidential

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?

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

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

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

Response:

The report assumes cost savings on the basis that full integration commences from 2025. In reality it is extremely unlikely that this will be the case due to the lead time to identify and amend the legal, regulatory and commercial barriers.

It is much more likely that some degree of coordination between offshore wind farms currently in early development and anticipating energisation in the late 2020s is possible.

"Full integration" is just one example of coordinated build and is at the extreme end of the coordination spectrum. "Coordination" itself covers a broad brief, including a modular approach to evolve from radial, sole-use connections into a more integrated offshore grid. We encourage that incremental or modular solutions are explored, targeting a regional scope (opposed to GB wide), anchored on projects that already have grid connections (opposed to speculative project sites). Please refer to the very end of this response for additional analysis RWE considers NGESO should undertake to strengthen the CBA.

We agree that HVDC is likely to be a very important technology for integrated grid design. We also consider that HVAC still has a role to play, particularly as many of the new offshore wind connections currently in development and coming online by 2030 will use HVAC technology. In addition, in some regions radial connections, albeit

potentially "integration enabled", may be the most cost efficient option to pursue and pursuit of a fully-integrated option could well be over-engineering the grid.

We consider that there are additional qualitative analyses that could be undertaken, likely as part of phase 2, which would provide additional evidence for delivery of coordination, and eventually possibly integration, at best value to the consumer:

- A study or literature review of the evolution of the offshore network in Germany. Initially Germany had cost overruns and issues such as grid delays. Do we ultimately consider that Germany has a more resilient offshore network due to its centralised and integrated approach, than would have results from a de-centralised and radial approach? Does it have less environmental impact than a non-coordinated model would have? Is it better value than a radial model would have been? How does the availability of the German offshore transmission assets compare with the GB offshore transmission assets?
- It will also be necessary to undertake a critical analysis of the UK model to date, to consider which aspects it will be important to maintain and best value from lessons learned. This could also look at the thorny issue of hypothetical "stranded assets". For example, had the infrastructure been built and financed in an integrated way, where exactly would these hypothetical stranded assets be (capacity potential of clusters vs capacity deployed). Whilst this will undoubtedly benefit from hindsight it could offer an insight into whether if there was an additional, say, 2GW of "spare" capacity of transmission in Dogger Bank, do we really now expect this would be "stranded"? Presumably it would instead be an attractive early route to market for The Crown Estate's Leasing Round 4 areas there. The phrase "build it, and they will come" appears very apt.
- The potential for planning and consenting challenges have been noted but not factored into the assessment at this stage. It is not clear if further assessment and refinement of these aspects and incorporation into the realistic 2030 and 2050 scenarios will take place within phase 2. Inclusion of this analysis would be particularly useful in relation to the deliverability of planned/potential TO asset upgrades or new infrastructure onshore (and HVDC subsea links) for both the status quo and integrated approaches.

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?

Response

This CBA satisfactorily sets out that increased coordination of offshore infrastructure, largely via integrated offshore grid infrastructure, can reduce the financial cost (by up to 18%[1]), and reduce societal impacts on coastal communities and environmental impacts of connecting the volumes of offshore wind set out in the Leading The Way FES Scenario.

This is an important confirmation, but this CBA does not consider a delivery model for this, or the timescales over which the delivery of offshore wind will evolve from the status quo to increased coordination to an eventual integrated grid. It is crucial that BEIS, Ofgem, NGESO and other key stakeholders work together at pace to determine this as part of the Offshore Transmission Network Review (OTNR).

We encourage NGESO and the Onshore TOs to critically assess during phase 2 of this work how deliverable the near-term government target of 40GW by 2030 is given their current obligations and processes for planning and constructing the onshore grid supporting offshore generation. Grid is without doubt the most fundamental barrier to timely connection of new offshore wind projects, and so any changes to enable faster connections must be identified and rectified as a matter of urgency.

In Medium to Long Term considerations the CBA acknowledges that integrated infrastructure would require anticipatory investment in that the shared infrastructure needs to be in place by the time the first of the aggregated wind farms is built, although the last one could be delivered several years later. The experience in Germany shows that some of the HVDC platforms were not fully utilised for many years. The CBA shows that this approach delivers best value for money for the consumer compared with the counterfactual, and Ofgem must find a way to make such investment business-as-usual in order for consumers to benefit by 2030 and beyond. Has the cost of temporarily "stranded" assets been accounted for in the CBA? This is not clear upon reading.

We have identified a number of areas which we believe require further clarification:

- Has the cost of the grid losses in 30km of 66kV cable to reach a NVDC platform been considered? This is likely to be high, and Developers are unlikely to welcome them. (ref: paragraph 2, page 11).
- The CBA makes the statement that: "*as the size of the wind turbines keeps growing, this optimisation will be possible to achieve as the energy density of windfarms per the unit of area increases (same installed capacity requires smaller area)*". This is a very simplistic assumption as worded. How has the CBA used this assumption? If this has been factored into cost savings somehow then please provide further details on assumptions and data sources.
- Table 2-3 lists the value of KPIs. Why is RES curtailment higher in the integrated world compared with the counterfactual? Has an assumption been made for increased overplanting in the integrated world as compared with the counterfactual.

[1] GB-wide assumption, we note the clarification that this may vary by locational circumstances

- The CBA states that the integration of wind (and solar PV?) will lead to dynamic challenges which would cost significantly more than in the counterfactual. What is the reason for this assumed vast difference?
- The CBA points to the assumption that at longer distances HVDC cable cost savings over HVAC costs start to benefit the overall HVDC solution. However HVDC cable costs are typically only 30% of the HVDC converter costs, which in turn is significantly higher than HVAC onshore and offshore substation costs (possibly even with a HVAC intermediate offshore substation). Could more detail be provided on the relative values of the cost assumptions to evidence the assumptions in the CBA?
- We support the application of the onshore security standard to the integrated elements of the offshore works. We suggest that the CBA should also explore whether there are grounds for a reduced security standard for offshore integrated elements. This would be important where the degree of interconnection is lower than the study currently suggests.
- What is the basis for the assumption that HVDC outages are generally less than HVAC outages? And on what basis – time, frequency, cost? Notably number of outages will not necessarily correlate with the availability level and therefore cost. HVDC cables are much longer, generally, than HVAC cables. Cable fault likelihood is currently calculated by CIGRE on cable length suggesting the fault rate for longer cables is higher resulting in greater predicted outage time.

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?

Response:

Immediate to short term opportunities for change

In the immediate term RWE recommends that NGESO's Network Options Assessment (NOA) is expanded offshore. Whilst the NOA process does not anticipate offshore connection locations, capacities and likely timings ahead of a connection application being received the process produces a flawed assessment of likely grid infrastructure requirements. The RIIO-2 price control should include funding and remit for NGESO to begin this as soon as possible. Indeed, delivery of the government's 40GW by 2030 at best value to the GB consumer depends upon it.

Given the delays offshore wind projects have experienced due to ESO and TO's reactive planning of infrastructure upgrades in relation to offshore wind capacity it is necessary for Ofgem to urgently update the frameworks for TO investment in grid infrastructure onshore to transmit offshore generation to demand centres once it has made landfall. There is a significant risk that lack of foresight by Onshore TOs and the ESO to appropriately plan and deliver grid capacity will lead to delays and more expensive infrastructure costs to the consumer than are necessary. Therefore the RIIO-T2 funding and net zero reopener processes should be designed with the intention of enabling anticipatory investment in grid

infrastructure onshore to enable and support the delivery of the government target of 40GW by 2030 at best value to the GB consumer.

In practice when applying for a grid connection offer the current process of TOs waiting until the output of a forthcoming NOA report before decisions about connection offers can be made means that discussions during a CION process can be delayed as TOs do not want to pre-judge the NOA report recommendations. Adopting the process described here would prevent this.

We fully agree that the existing Connections and Infrastructure Options Note (CION) process is outdated and requires reform. We also agree that the concept of **regional CIONs** should be developed further. We note that this is already an option within the framework, although there are no processes set out for how this would work in practice. Where NGESO have proposed this before (in Eastern England, for example) the developer community felt it was too risky an option for NGESO to pursue, as it would potentially result in the delay of some projects. How do NGESO plan to address those concerns as part of developing the process?

There are a great many fundamental issues to be addressed where such an important yet uncodified process is to be amended: what would the output of such a regional CION look like? Would projects be issued "coordinated" connection offers as a result? Such offers may require commercial agreements to be in place ahead of acceptance. What would happen if a project chose not to proceed pre or post signature? How much involvement would developers have in such a CION process?

Another key issue to address is that of timing of the CION process. Currently ESO separate the two highly interdependent processes of issuing offshore generation customers with a connection offer within 3 months and the completion of the CION process. This is not how the STC designed the processes to work, largely because it never anticipated large volumes of offshore wind capacity. This has resulted in ESO adopting the undefined and vague terms "pre-CION" and "post-CION" connection offers, out of context from the current guidance note, and in a way which can be used to give ESO and the relevant TO more than 3 months in reality to issue a comprehensive connection offer. The "pre-CION" offer could be used as a placeholder whilst the CION process is done, but one which ESO would still require the connecting customer to sign as per the terms in the CUSC and in doing so agree to take on financial securities and liabilities. Following this ESO and the relevant TO have scope to undertake a CION process with little to no codified timescales governing its completion and there is therefore risk that this lag could cause change connection agreements to be changed quite considerably even once they have been signed.

We agree with NGESO's acknowledgement there is a need to better formalise the role of the offshore developer as a "Shadow TO" for the time period over which they have responsibility for designing and constructing offshore transmission assets. This could be done via formalising their role in the STC, which NGESO place firmly in the "Medium to Long term". RWE considers that a key element missing today which prevents the "Shadow TO" role being formalised is the nervousness of NGESO and the Onshore TOs to discussing certain information with developers. This will need to be overcome in the short term in order to

discuss coordination as part of any pathfinder projects and using a revised regional CION process.

Any changes to the CION process guidance should be open to consultation. RWE remains of the view that the CION process being in the form of guidance rather than a codified process is not appropriate. It allows the process to operate non-transparently and outside the specific timescales set out in the CUSC for NGESO to issue coherent, complete and meaningful connection offers to customers. This results in delays to project programmes and financial implications for which developers have no control or recourse.

NGESO also suggests that they should exercise their existing ability to **fully or partially reopen CIONs to encourage coordination of geographical groupings of projects**. It is extremely important that the process by which this could come about is transparent and involves the active agreement of the Developer(s) involved. RWE considers that this could be pursued, subject to the next paragraph where a project identifies that it wishes to participate in a no-regrets pathfinder process to consider potential opportunities to coordination before 2030.

Developers and project shareholders need confirmation and comfort that their commercial interests will be protected as pathfinder projects. In particular that their existing connection agreement would be guaranteed and ringfenced as a baseline, and associated works would not be put on hold, whilst collectively NGESO, Ofgem, BEIS and Developers explore what coordination could be possible in a cluster/region, including what regulatory framework changes might be necessary to enable coordination opportunities. Any subsequent decisions to amend the baseline connection agreements should only be possible with the explicit agreement of the Developer(s) and shareholder(s) involved, as they need to fully take into account the sunk costs of their projects, often many millions of pounds. We suggest that NGESO confirm this in an open letter, along with a commitment that this process will not create delays to existing connection dates, to enable suitable developers and shareholders to commit to the no-regrets pathfinder process once it is set out by Ofgem and BEIS.

Medium to Long term opportunities for change

We fully agree with the four areas NGESO set out, and that work on each should commence in the second phase.

We consider that the packaging of seabed leasing with connection offers could help NGESO to plan ahead for the network more effectively than today, and if done efficiently could work alongside anticipatory investment to get offshore wind online quicker. This is entirely incompatible with NGESO's existing approach to the timing of CION though. Currently NGESO produce a "pre-CION" offer which could be entirely different to the "post-CION" offer (see page 5 of this response). The grid connection date and location, for example, being packaged with the seabed lease would only deliver additional confidence to Developers where it can be relied upon.

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.

Only one option (Integrated) is considered in the CBA versus the status quo. As our response sets out we consider that this is not a realistic model to "jump" to by 2025 and that a modular evolutionary approach to full integration around 2030 is more realistic.

We encourage that ESO strengthen the CBA by exploring incremental or modular solutions, targeting a regional scope (opposed to GB wide), anchored on projects that already have grid connections (opposed to speculative project sites). This would support the pathfinder process.

The CBA study uses the terms "coordinated" and "integrated" interchangeably and they are not the same thing. Integrated is just one example of coordinated and is at the "extreme" end of the spectrum. Coordinated includes a spectrum/variety of options including (non-exhaustive):

For improved coordination offshore:

a) "Radial Plus": Shared OFTO connection between two (or more) generators, where the users have coordinated connection agreements for this before investment is made in the offshore assets.
b) "Integration-enabled" connections: Oversized offshore transmission asset where anticipatory investment has been made to enable subsequent offshore connections into the spare capacity at a later date,
c) Multi-Purpose Interconnectors – which the BEIS-led Offshore Transmission Network Review (OTNR) firmly places in the post-2030 period. No evidence has been provided for why BEIS consider this possible only after 2030, and RWE considers this could be possible before 2030.
d) Onshore Coordination (various): there are ways in which congestion in the onshore grid network could be overcome. For example;
    i) Reallocation of grid capacity from stalled new build projects using milestones in connection agreements.
    ii) Queue management reforms have also long been touted by NGESO, and we would like to see these brought forward and utilised to prevent "blocking",
    iii) Coordination between onshore (traditional plant) and offshore (renewables plant) which tend to dispatch at dissimilar times – opportunities for commercial arrangements to be considered within connection offer arrangements.

Note that options (a), (b) and (c) are for coordination of offshore assets and reducing onshore landing points. Option (d) refers to ways in which grid capacity could be more efficiently allocated and utilised to the benefit of the GB consumer.