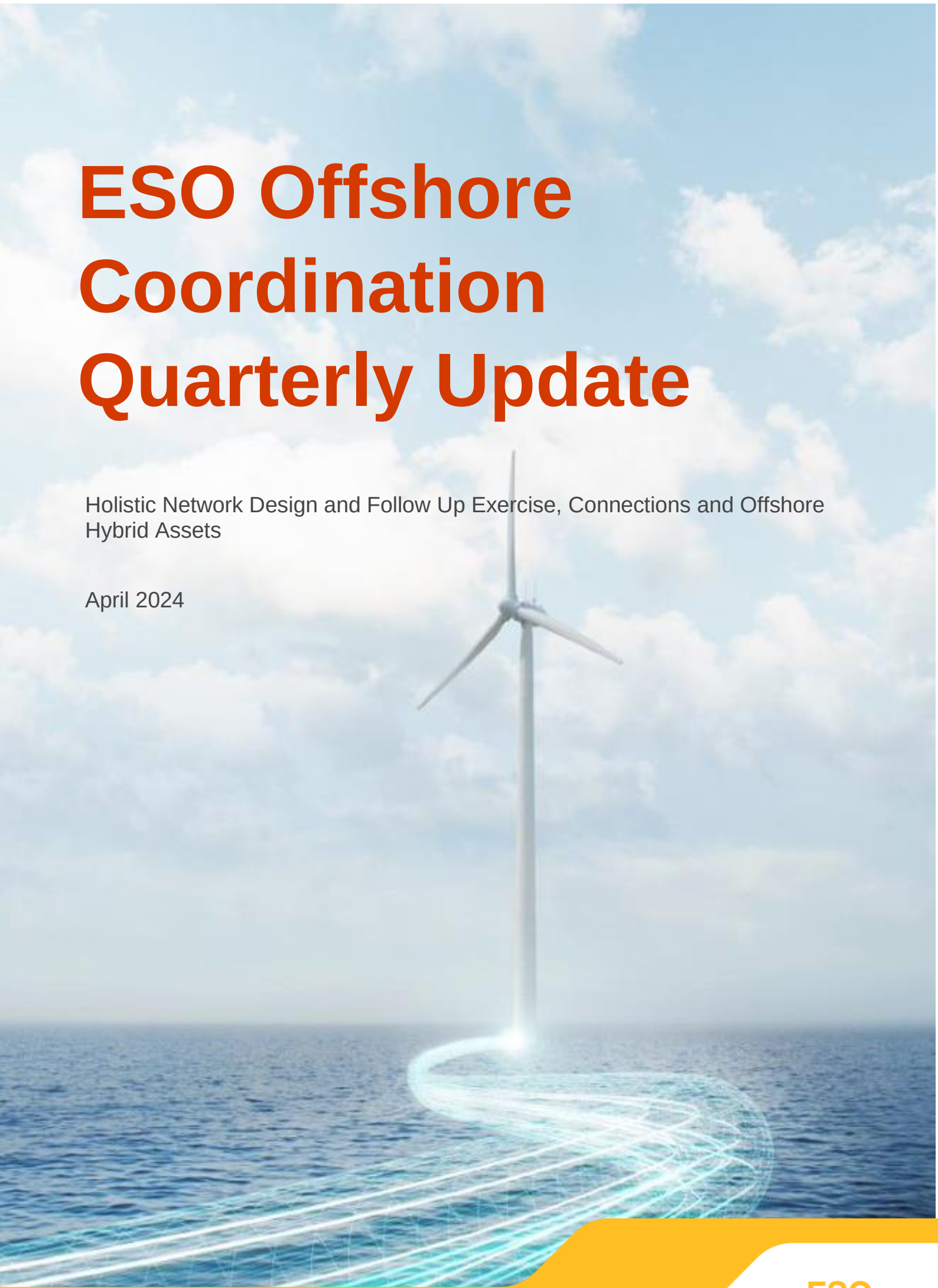
ESO Offshore Coordination Quarterly Update

Holistic Network Design and Follow Up Exercise, Connections and Offshore Hybrid Assets

April 2024



ESO

1. Introduction

In July 2022, we published *A Holistic Network Design for Offshore Wind*[1], a first of its kind, integrated approach for connecting 23 GW of offshore wind to Great Britain. Since then, we have been progressing work on the Holistic Network Design Follow Up Exercise (HNDFUE). The scope of the HNDFUE has been agreed through the Terms of Reference, which can be found on the Department for Energy and Net Zero's Offshore Transmission Network Review (OTNR) website[2].

In November 2022, we published the *Holistic Network Design Follow Up Exercise Methodology*[3], which provides an overview of our approach to developing HNDFUE network designs.

In March 2024, we published the *Beyond 2030*: *A national blueprint for a decarbonised electricity system in Great Britain* Report, which incorporated our recommendations for the HNDFUE with our annual network options assessment.

This is our fourth quarterly update to provide an overview of our ongoing Offshore Coordination work as the Electricity System Operator (ESO). The topics outlined in this document include updates on:

- ***Beyond 2030* Report –** the onshore and offshore network recommendations which form what was previously referred to as the Transitional Centralised Strategic Network Plan.
- **HNDFUE ScotWind –** the final recommended design for ScotWind projects in scope of the HNDFUE.
- **Innovation and Targeted Oil and Gas (INTOG) –** the INTOG process documents such as; Design Process, and Initial Strategic Options Appraisal Process (ISOA).
- **HNDFUE Celtic Sea –** an update on timeline and our connections approach.
- **Infrastructure Delivery Groups –** the development phase that follows the Holistic Network Design (HND) which is called the Detailed Network Design (DND).
- **Offshore Hybrid Assets (OHAs) –** the Office of Gas and Electricity Markets (Ofgem) and the Department for Energy and Net Zero collaborating with the industry to determine how OHAs could be designed, controlled, and operated.
- **Connections Reform –** the Final Recommendations published which outlines the concluding proposals and implementation strategy.
- **Centralised Strategic Network Plan (CSNP) –** the methodology in Ofgem's consultation on the CSNP framework.

[1] https://www.nationalgrideso.com/future-energy/pathway-2030-holistic-network-design/holistic-network-design-offshore-wind
[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1151585/otnr-holistic-network-design-follow-up-terms-of-reference-v4.pdf
[3] https://www.nationalgrideso.com/document/270851/download

2. Beyond 2030: A national blueprint for a decarbonised electricity system in Great Britain Report

We have now published our Beyond 2030: *A national blueprint for a decarbonised electricity system in Great Britain* Report[4]. This landmark report contains a set of onshore and offshore network recommendations which form what was previously referred to as the Transitional Centralised Strategic Network Plan.

The Beyond 2030 report builds on the Holistic Network Design (HND), further mapping the way to a clean, secure energy future by delivering on the Climate Change Committee's sixth Carbon Budget.

This plan supports the connection of 86GW of Offshore Wind generation throughout the 2030s as well as a breadth of other low carbon generation by recommending £58 Billion of investment directly into GB's electricity networks.

In the report, we are proposing both coordinated offshore infrastructure and a new electrical spine to transfer the green energy being produced in and around Scotland to cities across Great Britain. The scale of these recommendations cannot be underestimated, they include:

- 900 km of existing network upgrades
- 3,800 km new offshore network recommendations
- 1,600 km new onshore network recommendations

This plan will create the capability to connect up to 86 GW of offshore wind by 2035. This would equip Great Britain with the single largest offshore wind fleet in Europe and exceeding the offshore wind capacity of the United States of America by the mid-2030s. It will also connect many of other low-carbon electricity generation, including Sizewell C and Hinkley Point nuclear power plants.

This process is the first phase of network development. These recommended reinforcement projects will be refined and optimised through careful design to minimise impacts on communities and ensure that their wider benefits can be seen across the breadth of Great Britain.

[4] https://www.nationalgrideso.com/document/304756/download

3. Holistic Network Design Follow up Exercise (HNDFUE)

3.1 ScotWind

The final recommended design for ScotWind projects in scope of the HNDFUE, was published as part of the *Beyond 2030: A National Blueprint for a Decarbonised Electricity System in Great Britain*. Further details as above in section 1 of this update[5].

These projects are now moving into the detailed network design stage, developers of the non-radial offshore network are involved in the Infrastructure Delivery Groups. Further details follow later in section 4 of this update.

3.2 Innovation and Targeted Oil and Gas (INTOG) Leasing Round

We are continuing with our INTOG design process and since our last update we have completed the Initial Strategic Options Appraisal Process (ISOA) and have a draft shortlist of designs that have considered the four design objectives (Economic and Efficient, Deliverable and Operable, Environmental and Community) on an equal footing.

We have six shortlisted designs in our draft shortlist, and we have recently shared these with in scope developers, Environmental Subgroup (ESG) and the Central Design Group (CDG) for feedback. Once we have finished the Options Appraisal Summary Document (OASD), which details the process of the ISOA and how we have reached the shortlist, we will continue into the Final Strategic Options Appraisal (FSOA) process. This is where we will narrow the shortlist down to come to an overall INTOG recommended design.

3.3 Celtic Sea

The team have been considering all feedback provided by developers and our Celtic Sea Working Groups within our Final Strategic Options Appraisal (FSOA) process.

National Grid Electricity Transmission (NGET) have also completed their enabling works studies and are progressing the wider work studies along with the environmental studies, all of which will input into our FSOA.

In November, we heard that more time for stakeholder engagement and feedback is valued. We have found some of the more detailed elements in the FSOA have taken longer than we initially planned but we want to take the time to get it right. With this in mind, we have submitted a timeline change request to the Offshore Transmission Network Review Transmission Networks Board. This is to enable additional time for governance of the design recommendation and engagement with developers and our Celtic Sea Working Groups in the lead up to making our final design recommendation.

We are still committed to sharing a recommended design ahead of The Crown Estate's (TCE) invitation to tender in August as outlined in their Information Memorandum[6].

[5] https://www.nationalgrideso.com/future-energy/beyond-2030
[6] downloads.ctfassets.net/nv65su7t80y5/5zR4gHuqxjMG9NOK1LI2Av/643bfa91696be32408e5e2646c16bbba/Information_Memorandum.pdf

3.3.1 Connections approach for allocation of Round 5 capacity

We are taking a new approach to secure the first 4.5 GW of Round 5 capacity in the connection queue for the successful bidders and removing the additional capacity from unsuccessful bidders. This is in line with the Round 5 connection agreements.

The HNDFUE[7] is considering 3 x 1.5 GW Project Development Areas (PDAs) in the Celtic Sea and, for the first time, will make a design recommendation ahead of TCE awarding Round 5 Agreements for Lease in 2025. The position of the successful bidders in the connection queue is needed to enable the Transmission Owner to complete connection studies and for us to effectively produce a Round 5 design.

There are currently more than 30 GW of Round 5 bidders in the connections queue with more expected to apply. We must make sure we are taking the correct approach in how the Round 5 capacity is allocated, to avoid onerous design assumptions. Getting this wrong could result in long connection dates, confusing investment signals and a failure to meet the country's targets on the road to net zero.

Taking this into account, we have reviewed the approach to capacity allocation for Round 5 projects with NGET, Ofgem and the Department of Energy Security and Net Zero.

Our new approach will use the first 4.5 GW of capacity that can be attributed to Round 5 in the connection queue (or the nearest whole capacity based on existing positions) for the parties that are awarded an Agreement for Lease by TCE in the Round 5 tender, irrespective of who those winners are. Round 5 customers who have a connection agreement but who do not subsequently secure an Agreement for Lease from TCE will have their connection agreement terminated in accordance with the terms of their connection agreement. We anticipate this approach should not negatively impact projects that are not in leasing Round 5, who will remain in the same relative connection queue position as before.

We note that TCE does not require bidders to have a connection agreement to participate in the Round 5 tender, but we would recommend that any prospective bidders that do not already have a connection agreement to get in touch with us. Having a connection agreement in place will enable us to expedite the connection contract update process when the seabed Agreements for Lease are awarded by TCE.

Producing an offshore network design ahead of the Agreements for Lease being awarded is a first of its kind. Our approach will lead the way for long-term connections reform, reducing times to connect for new and existing projects, and speeding up the delivery of the projects required to meet net zero.

If you have any queries about this approach, please speak to your Connection Contract Manager or email box.OffshoreCoord@nationalgrideso.com.

[7] OTNR Pathway to 2030: Central Design Group and Network Design - Terms of Reference (publishing.service.gov.uk)

4. Infrastructure Delivery Groups

4.1 Impact Assessment Process

As part of the Detailed Network Design (DND) phase, electrically connected developers and Transmission Owners (TOs) have identified potential design changes, which has required us, with input from stakeholders, to develop an Impact Assessment process to assess the impact of these changes against the four design criteria, compared to the baseline of the Holistic Network Design (HND)[8].

We have now completed the first two Impact Assessments and anticipate starting a third shortly. The first of the Impact Assessments was for the "South cluster" (a group of HND developers and TOs due to be electrically connected off the east coast of England), which identified a design that presents benefits across several Network Design objectives compared to the original HND design (the 'baseline'). The outcome of this Impact Assessment is explained in the documents below:

- ESO letter to Ofgem – South Cluster Impact Assessment outcome
- South cluster Impact Assessment outcome summary.

The second of our completed Impact Assessments was a technology change submitted by the Northern cluster of east coast HND electrically connected Developers and TOs. The outcome of this sees a change in technology type from High Voltage Alternating Current (HVAC) to High Voltage Direct Current (HVDC) cable – the capacity of the link remains constant.

There are a number of factors that have changed since the HND was published which have influenced this outcome, including offshore costing and more detailed assessment of cable technology. Alternating Current (AC) cable assessment has identified a reduced ability to deliver and operate long offshore AC cables. We are working with equipment manufacturers through our deliverability forum to update our design assumptions accordingly.

A further Impact Assessment is planned to be submitted by the Northern cluster to explore different topology configurations of the cluster.

The Impact Assessment outcomes are shared on our website so please do look out for updates.

[8] www.nationalgrideso.com/document/286776/download

5. Offshore Hybrid Assets (OHAs)

In line with the OTNR in 2020 and along with subsequent Ofgem and the Department for Energy and Net Zero consultations, we have been busy collaborating with the industry over the last few months to determine how OHAs could be designed, controlled, and operated whilst at the same time considering what potential contractual relationships could look like.

An OHA combines the network infrastructure for offshore generation, wind in this case, with an interconnector to form a more efficient use of offshore assets and reduce costs to end consumers and minimise disruption to our coastal communities through coordination.

The two types of OHAs are:

- Non-Standard Interconnector (NSI) - interconnector with offshore generation in non-GB waters; and
- Multi-purpose Interconnector (MPI) - interconnector with offshore generation in GB waters.

5.1 MPI Framework Discussion Group (MFDG)

The MPI Framework Discussion Group (MFDG) has been running for over a year now and the associated workstreams have been busy identifying issues and developing potential options which have informed the Ofgem and the Department for Energy and Net Zero consultations over that period (please footnote for consultation links)[9].

Following the receipt of responses to Ofgem and the Department for Energy and Net Zero consultations back in June 2023, Ofgem, the Department for Energy and Net Zero and the industry are continuing to engage to progress options and outcomes further over the next few months.

The MFDG is open to any interested party and the associated four workstreams (WS) are as follows:

- WS1 - Contracts for Difference — Lead: The Department for Energy and Net Zero
- WS2 - Licensing — Lead: Ofgem
- WS3 - Charging and Market Arrangements — Lead: Ofgem and the Department for Energy and Net Zero
- WS4 - Operability — Lead: ESO

Through these WSs, the ESO, interconnector developers, TOs, offshore wind developers, Ofgem and the Department for Energy and Net Zero are working closely to explore options in the following areas:

- Licensing arrangements, asset classification
- Code and contractual arrangements

[9] **Consultations published relevant to OHAs since December 2023:**
- Ofgem - Pilot NSI Initial Project Assessment Minded to Consultation 01 March 2024 **Link**
- Ofgem – Initial Project Assessment of the Third Cap and Floor Window for Electricity Interconnectors 01 March 2024 **Link**
- Ofgem - Decision on Pilot NSI Projects Licence Conditions published 8 February 2024 **Link**
- The Department for Energy and Net Zero – Contracts for Difference Allocation Round 7 published January 2024 **Link**

Expected future consultations relevant to OHAs:
- Ofgem - MPI Initial Licence Drafting January 2024 – end February 2024, expected June 2024
- Ofgem – MPI Regime Parameters minded to expected June 2024
- Ofgem – Pilot NSI Regime Parameters, timeline, incentives expected end of March 2024
- Ofgem - MPI Regime Development January 2024 – May 2024 and decision expected May 2024

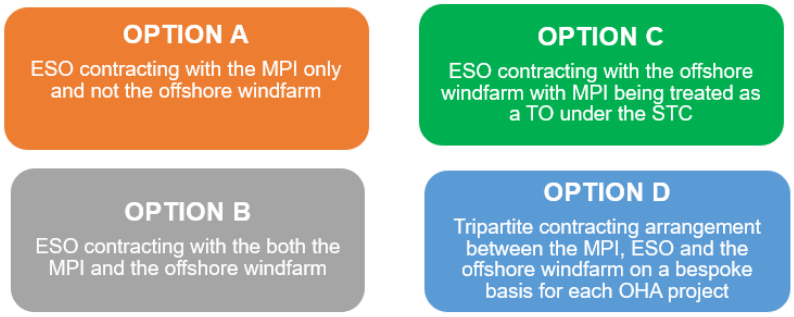
- Capacity, charging, access arrangements and support schemes
- Operability
- Market arrangements including bidding zone configuration
- Interaction with European markets and European network planning
- Interaction with wider framework reforms.

Running in parallel to the above WS4 - we have established a number of external focus groups to discuss in more detail, different technical and contracting options of OHAs. We have recently shared the Interim WS4 OHA Operability Report with the industry and have requested comments before the end of April 2004. The key areas of the report are as follows:

- Bidding Zones (Home Market or Offshore Bidding Zones)
- Auction types (implicit/explicit/multi regional loose volume coupling) and timing (day ahead/intraday)
- Contractual arrangements
- Compliance with Great Britain Industry Codes and European Network Codes
- Metering location
- OHA consideration in network planning for Great Britain.

The detail of the above areas is currently being developed within the industry and the outcomes will inform the final operability arrangements.

Spanning multi workstreams, work is being undertaken by us and our stakeholders to determine feasible options for a contractual framework for OHAs. The four options currently being considered are:



As described under the WS4 section above, contractual arrangements are being developed further looking at applying the different options to the two bidding zone models and determining for example:

- Transmission Entry Capacity (TEC) and Charging design
- Compensation options for curtailment/outages

6. Connections Reform

Our connections reform programme recently published an update on the implementation of the reformed connections process on our website, an enhanced ‘First Ready, First Connected’ approach (referred to as TMO4+).

In a way to spread awareness of this, the Connections team hosted a successful customer session on 16 April around the latest reform developments, which created a lot of engagement through Q&A, especially around TMO4+.

The publication outlines how we developed our ‘First Ready, First Connected’ process (referred to as TMO4) which was based on an early application window (with an indicative frequency and duration of 12 months) and two formal gates. Gate 1 would provide connection offers based on a co-ordinated network design connection date. Gate 2 would be used to determine queue position for projects within the application window and accelerate eligible projects.

Through stakeholder engagement and industry group workshops and sessions, many options were discussed and out of those discussions formed a variation where the queue is reformed based on project readiness being identified, in which we would ‘apply Gate 2 to the existing queue’. This approach will provide a positive, timely impact on connections timelines. This approach being referred to as TMO4+.

Our next steps will be to discuss the proposed TMO4+ approach with wider industry stakeholders, to provide them with the opportunity to comment on the recommended approach. We intend to run a series of engagement events in line with the schedule shown. While we do this, we’ll continue to take steer from the Connections Process Advisory Group (CPAG) and Connections Delivery Board (CDB).

Implementation of TMO4+ will require changes to industry Codes and Licence Conditions. We will shortly submit applications to Ofgem for our Code Modification Proposals (CMPs) and will request that these are treated as urgent. The code modification process will provide the opportunity for formal consultation with stakeholders as the proposals are progressed.

We will continue to develop our implementation plans, including transitional arrangements for projects in the current queue, and will engage with stakeholders on these shortly, as well as keeping the wider connections team informed through webinars and communications.

Please get in touch with the Connections Reform team via box.connectionsreform@nationalgrideso.com and check out the connections event page to register for our monthly online forums and sign up to the connection's newsletter.

7. Centralised Strategic Network Plan (CSNP)

We are currently developing a high-level initial methodology which will center around the proposed areas of change in Ofgem's consultation on the CSNP framework. It will capture the key processes of the new framework, concentrating on electricity transmission network planning.

We propose to focus on areas of significant change from our current approach to network planning. For example, we will outline our current thinking on how we will expand our capabilities to analyse year-round system needs across the transmission network, how environmental and community impacts can be considered at the high-level design stage and how we will develop the framework to allow Transmission Owner and third parties to develop network options.

We intend to set out in an initial discussion document in Spring 2024 to provide opportunity for feedback from a broad range of stakeholders before we publish a more comprehensive, final methodology for the CSNP later in 2024.

How can you get involved?

We welcome your thoughts and feedback on our developing approach as well as capturing your priorities in the initial version of the methodology. If you would like to get involved, please email box.NPR@nationalgrid.com.

If you have questions, please get in touch with us via box.OffshoreCoord@nationalgridESO.com.

Our next *Quarterly Update* will be in Summer 2024 which will be part of a wider Strategic Energy Planning update.

Offshore Coordination, **ESO**