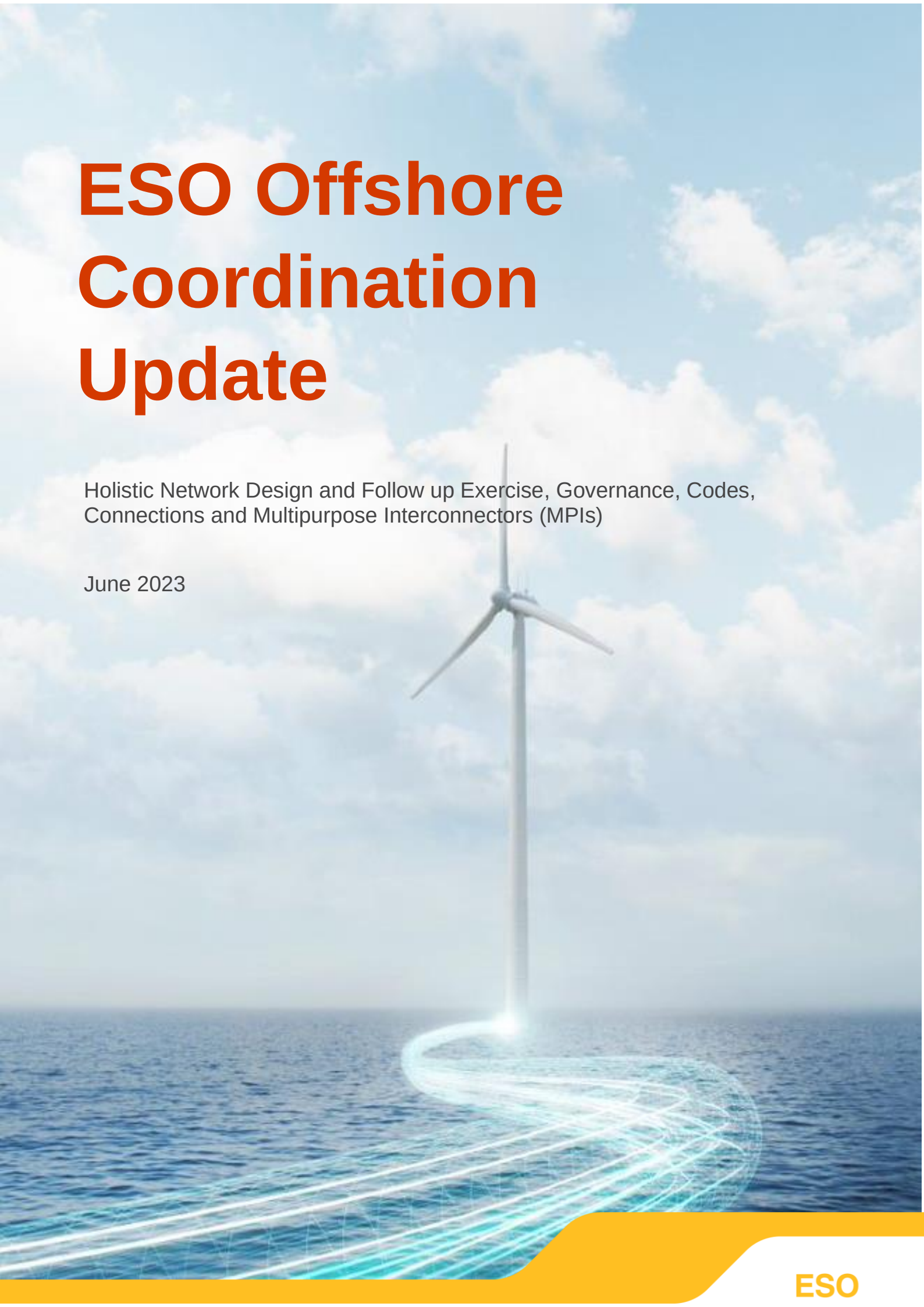
ESO Offshore Coordination Update

Holistic Network Design and Follow up Exercise, Governance, Codes, Connections and Multipurpose Interconnectors (MPIs)

June 2023



ESO

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 (GB). 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 Terms of Reference (ToR), which can be found on the Department for Energy and Net Zero's (The Energy Department) 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 design.

This update is to provide an overview of the ongoing work by the ESO on:

- HNDFUE ScotWind, Innovation and Targeted Oil & Gas (INTOG) and Celtic Sea leasing rounds
- progress of the Holistic Network Design (HND)
- HND governance and publications
- Multipurpose Interconnectors (MPIs)
- other ESO work relating to connections reform and code modifications.

Summary

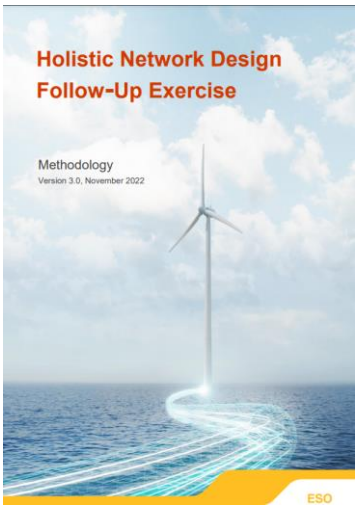
A summary of the topics outlined in this document:

- **HNDFUE ScotWind –** an update on the process and progress as we enter the Final Strategic Options Appraisal stage.
- **HNDFUE INTOG –** an update on the HNDFUE INTOG scope and expected timescales.
- **HNDFUE Celtic Sea –** an update on Celtic Sea progress and timings.
- **HND –** an update on our newly formed HND Infrastructure Delivery Groups.
- **HND Governance –** an update on OTNR governance that oversees the HND, HNDFUE and Offshore Coordination.
- **Publications –** an overview of the publications you can expect from the ESO and timescales regarding the HNDFUE ScotWind and Transitional Centralised Network Plan (tCSNP).
- **MPIs –** an update on the Ofgem established the MPI Framework Discussion Group (MFDG) and detail on the ESO led workstream 4.
- **Code Modifications –** an overview of the three inflight commercial code modifications, technical code modifications and the Offshore Coordination Codes and Standards Subgroup.
- **Connections Reform –** outlining the ESO's five-point plan to speed up the current connections queue.

[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

HNDFUE

ScotWind

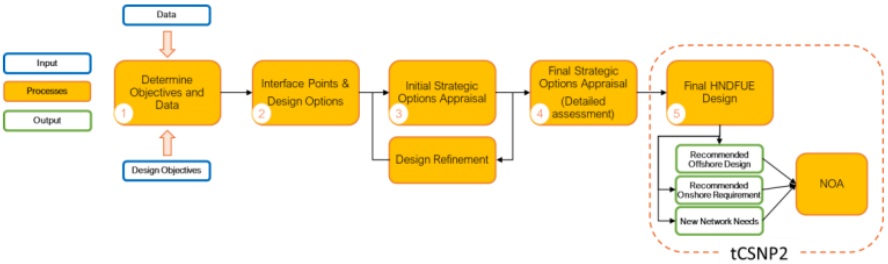


The purpose of the ScotWind HNDFUE is to provide network design recommendations for in scope projects that were not fully considered in the HND. We will deliver the HNDFUE in a holistic way, taking account of the four network design objectives (economic and efficient, deliverable and operable, minimising environmental impact, minimising community impact), in consultation with the Central Design Group (CDG). The CDG is a vehicle for the ESO to consult and collaborate with Transmission Owners (TOs), in scope developers, environmental and community representatives.

This design supports the Government ambition for 50 GW of offshore wind by 2030 for GB including 5 GW of GB's floating wind, as well as contributing to the Sixth Carbon Budget targets for 2035 and net-zero by 2050 for GB and by 2045 for Scotland (Scottish Government target).

The development of a coordinated onshore and offshore NETS impacts a wide range of stakeholders; therefore, stakeholder engagement is critical to the successful delivery of the HNDFUE. Although the HNDFUE is led by the ESO, several partners and stakeholders are engaged at regular touchpoints, including the transmission owners (National Grid Electricity Transmission, SP Transmission, Scottish and Southern Electricity Networks - Transmission), community representatives, environmental representatives, in scope developers, the Department for Energy Strategy and Net-Zero, Ofgem, Crown Estate Scotland, and the Scottish Government, including the Marine Scotland Directorate.

Overall, the design process consists of five key phases shown below. We are currently working on **step 4**, the final strategic options appraisal.



We anticipate completing the final strategic options appraisal during the summer, and publishing the recommended design, together with the other elements of the Transitional Centralised Network (tCSNP) by the end of 2023. It is anticipated that the connection contract update programme will begin in September 2023 following the final HNDFUE recommendation.

We have also started initial discussions with Ofgem on asset classification for HNDFUE. Ofgem intend to follow a similar process as for HND1, looking at the function of each asset within the network. ESO will provide data to allow Ofgem to undertake Asset Classification provisionally on the short-listed designs, with a view to confirming Asset Classification as soon as possible following the design recommendation being confirmed.

Innovation and Targeted Oil and Gas (INTOG) leasing round

The North Sea Transition deal was announced in March 2021 which set out plans to enable offshore oil and gas sectors to work with the UK government to reduce carbon emissions to net zero by 2050, with specific targets associated with 2025, 2027 and 2030. The deal is built upon five outcomes, one of which is supply decarbonisation. In response to this The Scottish Government is developing a Sectoral Marine Plan for Offshore Wind Energy, as part of which Crown Estate Scotland (CES) announced their INTOG leasing round. This leasing round is aimed at supply decarbonisation and provided offshore wind developers the opportunity to apply for seabed rights specifically to develop offshore wind projects which will directly supply low carbon electricity to power oil and gas platforms.

The Innovation and Targeted Oil and Gas (INTOG) leasing round opened on 10 August 2022 and Crown Estate Scotland announced 13 lease winners on 24 March 2023. Following the announcement of the INTOG leasing round, we have been engaging with INTOG developers and completed a data gathering exercise in which we asked developers about their route to market, scale and project progress to date. This allowed us to come to an informed proposal regarding which of the successful lease applicants should be in scope of the INTOG design exercise. Following our assessment, we presented our proposals to the OTNR Transmission Networks Board (TNB) in May 2023.They approved the change to the HNDFUE ToR to incorporate some of the INTOG projects in this exercise.

INTOG developers have been made aware of their position within the HNDFUE INTOG design scope. Overall, there are two projects that are in scope for Innovation and four projects in scope for Targeted Oil and Gas, totalling six projects.

This will not impact the timescales of the HNDFUE (ScotWind). INTOG recommendations will be made later than ScotWind recommendations, as the ScotWind recommended design will be used as an input to the INTOG process. The design process for INTOG will start following the finalisation of HNDFUE in the summer with a view to have a final recommended design for INTOG projects in Q1 2024.

Celtic Sea

The Celtic Sea HNDFUE process is reliant on inputs from The Crown Estate (TCE), who have been working through spatial considerations that impact the data that informs our design and timeline. Our Celtic Sea HNDFUE timeline has been updated to reflect when The Crown Estate can confirm their position on the project development areas (PDAs). This has been approved by the OTNR TNB.

We have also reflected that we need to incorporate more developer engagement and feedback opportunities into our timeline. The updated programme will enable us to do this, and we will be looking at hosting developer webinars and/or workshops in line with our design appraisals and shortlisting later this year to ensure that developers interested in the leasing round are able to input into the process. We will share timings for this as soon as we can. We aim to have a final recommended design in early 2024.

We currently have 56 unique Celtic Sea design options. We recently sought feedback from the Celtic Sea Subgroup on the long list of designs; this feedback is currently being processed and will feed into our design work. These designs will be updated and refined based on TCE spatial information. To inform design refinement we will be seeking developer feedback after TCE's spatial work is concluded and public.

HND

HND Infrastructure Delivery Groups

Work has begun within the Offshore Coordination Project to assist with facilitating the delivery of the transmission infrastructure recommended in the HND.

In order to support developers of non-radial offshore network in HND and Transmission Owners (TOs) overcome barriers to delivery, we have established two forums, an East Coast Technical Forum and a Commercial Forum. These run approximately fortnightly. They are coordinated by the ESO and attended by TOs, HND developers with non-radial connections, Ofgem, The Energy Department and Scottish Government. The purpose of the forums is to tackle the cross-cutting technical and commercial issues which have been identified and prioritised within the forums. We are exploring the issues collaboratively and the members of the forums will progress actions where appropriate or escalate to other organisations/channels where the solution is not within the members' remit.

Currently, the focus of the forums is delivery of the HND and, as such, membership of the groups covers those directly involved in this stage. Once designs for HNDFUE are finalised and any challenges to delivery are understood, we will determine the appropriate approach to bringing additional stakeholders and/or issues into scope.

HND Governance

The OTNR and Central Design Group (CDG) is outlined in section two of the Stakeholder Approach, Engagement and Feedback Report[4]. While the governance model has generally remained consistent throughout HND and HNDFUE, there have been a few updates:

OTNR TNB

Background – The TNB was the OTNR Project Management Board. The board decided that in response to there being less policy to discuss and fewer items coming to the board a change to the governance was required. Alongside this it was recognised that a lot of the issues faced for offshore transmission were the same as onshore transmission; many of the stakeholders and delivery partners are affected by and think about these issues in the same way and there wasn't a forum which brought onshore and offshore transmission together. Therefore, expanding the OTNR Project Management Board to include onshore transmission and rebrand as the Transmission Networks Board was the approach decided upon.

The purpose - To speed up the delivery of transmission infrastructure through improving alignment, reporting, and tracking delivery of ongoing reforms.

What it does - Should direct the work and provide senior oversight of project governance and delivery for onshore transmission networks and offshore transmission networks. The TNB can make prioritisation, option selection and direction-setting decision for the projects in scope. It reports into the Electricity Networks Board which is a DESNZ and Ofgem joint strategic based board, the final decision making authority.

[4] https://www.nationalgrideso.com/document/262696/download

CDG

CDG Consultative Board

As we enter into the Final Strategic Options Appraisal whereby including the onshore reinforcements options that have been identified into the six final shortlisted designs. This will enable us to rank the designs and in turn narrow down the shortlisted designs to the top-ranking and be able to present a recommended design.

As part of the Terms of Reference (ToR) for the HNDFUE, the ESO needs to consult with the Central Design Group (CDG). We are planning on doing this as part of our new CDG Consultative Board in which we will have two sessions. The first session will cover the discounting of any of the shortlisted designs and also provide insight into which of the remaining options are ranked best at this time. This will also be an opportunity for the group to provide feedback at this crucial stage.

The second and final session will focus on the remaining shortlisted options, discounting options with accompanying rationale until there is a single and final recommended HNDFUE design. We will ask organisations to discuss and provide a statement on the designs before they are discounted.

The CDG has also formed two new sub-groups since the report publication, the Celtic Sea Subgroup which is described on our website[5] and the Deliverability Forum which was formed to support the development of the HND Technology Assumptions and HND Deliverability Options Appraisal Criteria with technical experts from across the industry. There has also been an update to Codes and Standards Subgroup as outlined in the Code Modification section.

Publications

The second Transitional Centralised Network Plan (tCSNP2) is an overarching publication which captures the recommendations of both Network Option Assessment (NOA) 2023/24 and the HNDFUE ScotWind. We will aim to publish this suite of documents by the end of 2023.

It builds on the first Transitional Centralised Network Plan which comprised of the NOA Refresh, the Holistic Network Design and its associated publications.

tCSNP2 is the final transitional network planning exercise before the commencement of the Centralised Strategic Network Plan (CSNP) which will be undertaken by the Future System Operator (FSO)[6].

NOA 2023/24 will, for the first time, integrate the four design objectives used within the HND and its follow up exercise. NOA 2023/24 will assess the needs case for future network reinforcements based on the results of the Electricity Ten Year Statement (ETYS) process. ETYS determines the future transmission system requirements based upon the Future Energy Scenario (FES) 2023 publication and its scenarios. Provisions will be made to include the recommendations of the HNDFUE. This will determine the optimal set of future transmission reinforcement works across a range of credible scenarios (three of which achieve net-zero by 2050).

Further work is included in this process which will examine the benefit of new and innovative solutions which can deliver equivalent benefit via non-transmission solutions.

[5] https://www.nationalgrideso.com/future-energy/pathway-2030-holistic-network-design/holistic-network-design-offshore-wind
[6] https://www.nationalgrideso.com/what-we-do/our-strategy/future-system-operator-fso

Multipurpose Interconnectors (MPIs)

The launch of the OTNR (Offshore Transmission Network Review) in 2020 saw the establishment of four workstreams, one of which was Multi-Purpose Interconnectors (MPI), which is relevant to the three temporal workstreams of Early Opportunities, Pathway to 2030 and Enduring Regime.

A Multi-Purpose Interconnector (MPI) 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.

MPI Framework Discussion Group (MFDG)

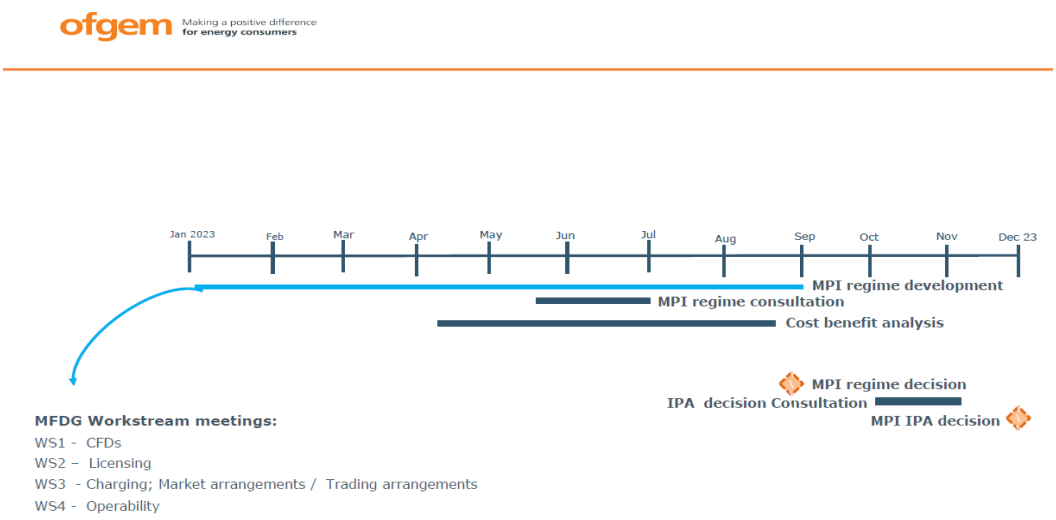
As a result of the large number of areas identified required consideration for an MPI, Ofgem established the MPI Framework Discussion Group (MFDG). The purpose of the MFDG is to develop proposals for the commercial and regulatory frameworks that will apply to MPIs and the windfarms that connect to them. These proposals will then be subject to the usual industry consultation processes prior to being finalised by the relevant authority and implemented.

The MFDG has established four workstreams:

- WS1 – Contracts for Difference: Lead: The Energy Department
- WS2 – Licensing Lead: Ofgem
- WS3 - Charging and Market Arrangements Lead: Ofgem & The Energy Department
- WS4 – Operability Lead: ESO

These workstreams and the MFDG are open to any interested party and meeting information, including Terms of Reference, can be found on the Ofgem website.

The diagram below is Ofgem's April 2023 timeline for the four workstreams.



WS4 was established three months ago and as such the target date for the deliverables for this workstream will be later in 2023 than for WS1, WS2 and WS3.

Through these workstreams, the ESO, interconnector and offshore wind developers, Ofgem and the Energy Department are working closely to explore and understand topics including:

- Asset classification and roles & responsibilities
- Licensing arrangements
- Capacity and access arrangements

- Charging arrangements
- How the MPIs would be operated and managed
- Contractual arrangements including the industry Codes and Standards to be applied
- Market arrangements including bidding zone configuration
- Interaction with European markets e,g. cross border trading arrangements and relevant agreements
- Interaction with the current Review of Electricity Market Arrangements (REMA)
- Considerations of interim and enduring arrangements
- Support schemes

Ofgem is planning to publish a further consultation on the MPI Regime soon and we also expect another consultation around the same time from the Energy Department & Ofgem on MPI Market Arrangements.

Codes and Connections

Code Modifications

On 7 July 2022 we published the *Industry Code, Standard and Licence Recommendation Report*[7] alongside the *HND.*
The report identified potential changes required to codes, standards, and licences in respect of the HND and the Office of Gas and Electricity Markets' (Ofgem's) minded-to decision on an offshore delivery model[8]. The recommendation report was used as a tool to gain further stakeholder views on our initial thinking and to highlight areas where we thought code and standard modifications may be required in future.
Stakeholder feedback has challenged, shaped, and informed our proposals on potential and necessary changes to codes and standards, and we outline our continued engagement below along with the progress of code modifications.

Offshore Coordination Codes and Standards Subgroup

We were running a monthly Codes and Standards Subgroup of the OTNR Expert Advisory Group with the industry throughout the course of 2022 to provide updates on identify and progressing codes and standards changes to facilitate OTNR.

In January 2023 we refreshed the emphasis of the Subgroup to ensure we can engage with the industry and discuss methodology changes with industry experts related to OTNR before they are formally proposed via the standard industry governance process. Therefore, the meetings were re-purposed as the Offshore Coordination Code Modification Subgroup.

- The overall purpose of the refreshed Subgroup is to consider, discuss and provide input into developing methodology changes to support the ESO in creating a set of draft code modifications to facilitate offshore coordination. Two Sub-Groups were set up:
    - One focusing on the Transmission Network Use of System (TNUoS) Charging methodology within section 14 of the Connection and Use of System Code (CUSC). To date four meetings have been held. The discussions have been primarily around discussing the HND and focusing on the principles to be adopted when assigning a generation zone to offshore assets for Wider Tariff Purposes, reviewing onshore generator charges or use of or access to the offshore network along with the requirement for a new MITS Node definition. We will continue the discussions in the coming weeks before raising code modifications accordingly.

[7] https://www.nationalgrideso.com/document/262691/download
[8] https://www.ofgem.gov.uk/publications/minded-decision-and-further-consultation-pathway-2030

- The second is focussing on the technical changes related to the Security and Quality of Supply Standard (SQSS), the Grid Code and the System Operator Transmission Code (STC). We are currently understanding the concerns/needs of the wider industry to get feedback on proposed solutions.

In flight Commercial Code Modifications

We have identified and are progressing the following modifications to the Connection and Use of System Code (CUSC):

- **CMP402 - Extension of current User Commitment Principles to incorporate Anticipatory Investment (AI).** We raised a CUSC Code Modification in December 2022 following Ofgem's final decision announcement on AI. To date there have been five working group meetings to work through our proposals as well as identify alternate solutions. We are currently in the consultation phase[9], which is running from 24 May 2023 until 15 June 2023.
- **CMP411 – Introduction of AI within the section 14 charging methodologies.** CMP411 was raised in February to implement Ofgem's policy decision and seeks to introduce AI and a mechanism for the recovery of AI costs within the Section 14 charging methodologies. To date three working group meetings have been held to discuss through the proposal. The next working group is scheduled for 8th June with the consultation phase is due to run between 16th June and 7th July.
- **CMP376 - Queue Management**. This code modification was reintroduced in September 2022 and creates the ability to terminate a project if it has not met pre-agreed milestones. It is currently estimated that this will go to Ofgem in June 2023 for their decision – approval timelines are TBC. In June, the ESO Connections Reform consultation will launch which will seek responses and input into whether amendments to the currently drafted queue management proposals would benefit a reformed connections process. We will also continue to consider whether any further process amendments could be required in future in relation to connections to non-radial offshore transmission system.

Technical Codes Modifications

We are aiming to have made a decision on the technical code changes required by mid-2024 to allow industry stakeholders to make business critical decisions. We will not deliver a specific modification at this point, but will have started to design them for submission into the code governance process. Short-term modification requirements in the relevant codes identified include:

- **SQSS** chapter 1 and 7 changes to allow for non-radial connections, including multiple interface points and offshore substations, are currently being developed.
- For the **Grid Code**, we are working on European Connection Conditions (ECC) section 6 and changes in relation to multi-terminal HVDC networks. As you would expect, this is where most changes are needed.
- **STC** section K changes are being explored but are most likely to be developed once we have a clear view of the required changes to Grid Code. Changes to STC section D are also being explored to facilitate offshore coordination.

We are also holding sessions with wider industry members to understand their concerns/needs and to get feedback on the proposed solutions ahead of submission into the code modification process.

[9] https://www.nationalgrideso.com/industry-information/codes/cusc/modifications/cmp402-introduction-anticipatory-investment-ai

Connections Reform

Our connections reform programme[10] is currently in Phase 2, working towards a consultation in June 2023.

We are also initiating a five-point plan to update the existing connections process for the electricity transmission grid to complement its programme of longer-term reform. The ESO's five-point plan to speed up the current connections queue is as follows:

1. Allowing customers to leave our queue without incurring penalties for doing so. This amnesty closed in April 2023 and received over 8GW of interest – alleviating pressures within the pipeline of projects. This action has now been completed and Ofgem is working to approve these contract terminations.

2. We are updating how we calculate project connection dates. This action has been completed and we are working with GB's Transmission Owners to review and update existing contracts with these new Construction Planning Assumptions (CPAs).

3. Batteries and other energy storage technologies soak up energy generation when connected to the grid as well as releasing it back onto the grid. As this technology has a dual purpose, we have changed how we calculate their impact on the system.

4. We are developing new contractual terms for connection contracts to manage the queue more efficiently, so those projects that are progressing can connect and those that are not can leave the queue. The proposals have now been consulted on and we are preparing the final paper to go to Ofgem in June.

5. And finally, we can confirm the ESO will be enabling energy storage projects to connect to the grid more quickly. This will speed up connections for up to 95 GW of energy storage projects in the pipeline. To ensure system security, they may be instructed to reduce their output on very rare occasions.

Please get in touch with the Connections Reform team via box.connectionsreform@nationalgrideso.com and subscribe to the mailing list[11].

We hope this update provides clarity and insight on what we are working on, and what you can expect from us over the coming months.

If you have questions, please get in touch with us via box.OffshoreCoord@ nationalgridESO.com. We hope to provide regular updates as we progress through the work outlined in this document.

Offshore Coordination, **ESO**

[10] https://www.nationalgrideso.com/industry-information/connections/connections-reform
[11] https://subscribers.nationalgrid.co.uk/h/d/26CD448E3AF68228