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8 September 2021

Dear Neal, Patricia and Mary,

Subject: Shell response to Ofgem's consultation on Changes intended to bring about greater coordination in the development of offshore energy networks

Shell welcomes the opportunity to respond to Ofgem's consultation on "Changes intended to bring about greater coordination on the development of offshore energy networks", which is under the joint BEIS-Ofgem Offshore Transmission Network Review (OTNR).

Pathway to 2030

We agree with Ofgem that there need to be changes under Pathways to 2030 (PT2030) to ensure that there is more coordination in the development of the transmission network, and that the current system needs to be improved. We view that PT2030 should take a pragmatic approach to focus on solutions that address the most impactful and resolvable issues and ensure that the offshore wind projects can still be delivered to time. This should focus on expanding the onshore transmission network while maintaining the current offshore transmission regime.

It is also essential that BEIS and Ofgem consider more fundamental reform to deliver further coordination offshore, but they will be better placed in the Enduring Regime (ER), where there will be more time to fully design the regime and limit the impact on existing projects' deliverability.

The current framework of PT2030 with the Holistic Network Design (HND), Detailed Network Design (DND) and delivery could provide benefits for consumers and industry. However, the focus of PT2030 should be on expanding the onshore transmission network and building and reinforcing substations as close to the coast as feasible, while offshore wind developers build the necessary radial links to the onshore substation. This will solve the most significant issues with the current lack of coordination, such as in Norfolk where there are lengthy criss-crossing connections which repeatedly disrupt the same area and sets of stakeholders.

This focus will also ensure that the transmission infrastructure and offshore wind farms can be delivered in a timely fashion, as it will be delivered by the organisations with the proven knowledge and experience in the UK, and without requiring extensive changes to the regulatory framework, ensuring that we can meet the 2030 targets and the 6th Carbon Budget. We are strongly concerned that a failure to address the lack of onshore coordination risks increasing public resistance, or eroding public support, for the further renewable deployment necessary to achieve net zero.

We view the more structured approach to co-ordination and Ofgem's involvement should support anticipatory investment and will hopefully provide Ofgem with the comfort and analysis it needs. This investment should consider the future system beyond the PT2030 projects. It should ensure that the

infrastructure built through PT2030 is future proof and has been built in-line to accommodate future offshore grid connections, as well as future infrastructure such as electrolyzers, storage and Multi-purpose Interconnectors (MPIs).

The options under consideration for PT2030 are very broad, ranging from incremental to fundamental change to the approach to delivering the infrastructure that connects an offshore wind farm and reinforces the transmission network. Much of the necessary detail to assess the impact of these options, from the split between onshore and offshore transmission, to the framework and incentives for an Offshore Transmission Owner (OFTO) to develop and build infrastructure, has not been fully developed or included. Properly developing these policies will take time, and it is hard for us, or any other stakeholder, to fully identify our preferred solutions without this information.

Our view is that this lack of clarity, and the time needed to develop these details, are a further reason to support the expansion of the onshore transmission network, while preserving elements of the current framework offshore. This will resolve the most significant blockers of the current regime, while ensuring infrastructure can be delivered. Adopting the work taken for these proposals to the ER will enable them to be considered fully, with more detail and time.

Offshore Transmission Demand

The OTNR has rightly considered how the development of offshore wind farms and the transmission network can be coordinated, and improved, in different timescales. However, the OTNR does not consider the impact of transmission demand. Currently, the transmission demand framework is designed to accommodate stand-alone demand sites onshore. The framework does not consider transmission demand that might be offshore, such as electrified oil and gas platforms, or onshore demand that might look to synergise with offshore generation, such as a hydrogen electrolyser.

We recommend that BEIS and Ofgem reviews the framework for offshore demand under the OTNR. Further, we view this needs to be done quickly, as this framework is a necessary enabler for both offshore electrification and efficiently connecting Hydrogen demand and will be essential to the UK's net-zero transition.

Multi-Purpose Interconnectors

We support Ofgem and BEIS' work to review the arrangements on Multi-Purpose Interconnectors (MPIs), as they will play an essential part in meeting our net-zero targets by 2050 and ensure we can efficiently deploy 75+GW of offshore wind, as well as further interconnect the GB market with our neighbours.

Many of the areas Ofgem is reviewing are relevant, but we are concerned that they are being reviewed without fully considering the impact on the offshore wind farm. For a hybrid to be an investible project, both the offshore wind farm and the transmission infrastructure need to be investible. We have set out below in more detail what we view some of the key considerations and key commercial and regulatory risks are.

In our view it is essential that in developing these proposals, Ofgem equally considers the impact on offshore wind developers and the potential transmission organisations, whether it is an OFTO, Interconnector or other. Ofgem needs to ensure that these organisations are all consulted while these frameworks are developed in further detail, whether in this workstream or under the Enduring Regime.

Further while the GB arrangements are not directly comparable to the EU arrangements, we view that there are significant crossovers and there would be benefits from considering the debate on considering a Home Market or Offshore Bidding Zone model.

We have set out our views on your specific questions on PT2030 below.

Pathway to 2030 Questions and Answers

Question 8: We consider that a holistic design will result in a more coordinated, economic and efficient network. Do you agree? Please give reasons for your answer.

We agree that Ofgem's proposals for National Grid Electricity System Operator (NG ESO) to produce a Holistic Network Design (HND) will result in a more coordinated, economic and efficient network. We think this is likely for the following reasons:

1. The Generation map brings together relevant up to date information.
2. Coordination will be simpler as multiple projects are being assessed at the same time and while they're at the same or similar stages.
3. Ofgem has set out in advance criteria that it wants to see to approve investment.

However, we see a material risk the HND will produce sub-optimal solutions that will not be deliverable, will delay projects and risk our 2030 and 6th Carbon Budget targets. The outputs of the HND will significantly depend on the inputs and models that are used for it. In our experience many models or high-level assessments of designing the transmission network ignore or limit key considerations. One of these for example is the impact of delays, as well as the impact on users of the network of these delays. We can see this in proposed solutions such in NG ESO's Offshore Coordination Phase 1 reports, where top-down assessments proposed complex solutions such as heavily interconnected infrastructure and bootstraps, but this was done without considering the organisations that will deliver it, the supply chain capability/deliverability or the costs and impact on the users/offshore wind farms if there are delays.

To address this risk the HND needs to be constrained by the infrastructure that is likely deliverable within the timescales for PT2030. We expect that this will be infrastructure similar to the status-quo, but can be improved by building and reinforcing onshore substations that are closer to shore. For PT2030 the offshore wind farm developers can then build radial connections from these substations.

In addition, we view that it is necessary that the HND process consults and includes offshore wind developers, as the most impacted parties. This mirrors the design of the current processes which recognises that connecting offshore wind farms requires developers and transmission companies to work together. As part of this we would also recommend that as many elements of the HND are made public as is feasible, including the generation map.

Question 9: Do you agree with the planned work for a detailed network design offshore?

Our initial view is that the concept of this work is fine. However, it is difficult to agree or disagree without knowing what the specific outputs of the Detailed Network Design (DND) offshore will be. It will also be necessary to understand the delineation between onshore and offshore to determine a firm view. Will this DND seek to emulate the process of an SQSS design variation, which is often sought to seek an optimal offshore network design?

As above, we view that it is essential that offshore wind developers are consulted and are able to provide input into this process, where they are not already responsible for delivering it. This is especially important as offshore wind developers are the organisations with the experience in the UK of designing and optimising offshore transmission assets, and this will help ensure there are synergies between these assets and the offshore wind farm.

Question 10: Who do you believe is best placed to undertake the detailed design for assets that are in offshore waters?

Generally, the party that builds and operates the assets will be in the best position to design the assets. Again, we view it is hard to answer this question without knowing the specific delineation of onshore/offshore transmission, and what the outputs of the DND should be.

Historically, the offshore wind farm has been in the best position as they could optimise the transmission assets with the offshore wind farm and optimise across design and construction. This has historically been done in the context of radial connections, which have connected single wind farms.

As offshore transmission assets play a wider role than radial connections and connect multiple offshore wind farms, Ofgem will need to consider who is best placed to undertake the detailed design. In our view it should probably be whoever builds the assets and could be either a network company or offshore wind developers. If a network company is responsible it will need to be appropriately incentivised to ensure it develops and builds assets to suit the needs of the offshore wind developer, as the user of the network, and consults with them. We are concerned that the current frameworks do not provide this incentive and we do not have clarity or security that it will be implemented in future frameworks if Ofgem decides a transmission company should deliver this.

Question 11: Do you agree that the existing developer led model should be retained and applied where the HND indicates a radial solution should be used? Please explain your answer.

Yes, the existing model should be retained where the HND suggests a radial solution should be used. The existing model is well understood and has delivered benefits, namely in competition between the offshore wind developers and the developers optimising their offshore transmission connections in-line with their offshore wind farms.

As we've responded elsewhere, within the context of PT2030 we view it is necessary to preserve the offshore wind farm developer designing and building radial assets offshore.

Question 12: Please provide your views on each of the delivery options we have described in this document. In providing your views, please comment on the issues we have raised. Please also give your views on the implementation issues we have raised.

In our view, delivery option 6 will deliver the most benefits and ensure that infrastructure is developed and built-in time to meet the ambitious build-out targets for 2030 and the 6th Carbon Budget. Through properly designing the HND process and imposing a focus and requirement on extending and reinforcing coastal substations, we view this combination maximises deliverability while also having sufficient coordination to resolve the most critical issues with the current framework.

Out of the other options, we view that options 1 and 5 might be feasible, while options 2, 3 and 4 will materially increase the risks and costs of delivering the transmission assets. We've assessed these options using the following guidelines:

- Generally, there are strong benefits from having the same organisation design and build the assets, as well as operate them;
- It's beneficial to reduce, or avoiding introducing additional interfaces in developing, building and operating infrastructure;
- There will be costs and risks with any Mergers & Acquisition process and transferring infrastructure;
- Competition is beneficial; and
- Timeliness and deliverability is key.

Our views on the options are below:

1. Option 1, TO Build and Operate: In our view this is a feasible option. While it has the least amount of competition, it also introduces the least interfaces, which is an important consideration for any transmission infrastructure which is heavily connected and not radial or point to point. Further, the onshore TOs have significant experience building transmission infrastructure, though mainly onshore and not offshore.
2. Option 2, TO Build > OFTO Operate: We do not support this option. This option requires transferring infrastructure from one regulated body to another and introducing an additional interface while implementing competition where it will have the least benefit.
3. Option 3, TO Design > OFTO Build and Operate. We do not support this option. Conceptually we understand the benefit from ensuring there is competition in construction (and operation). However, the handover from development to construction is one of the most important transitions in any infrastructure project, and could introduce material risks, especially on deliverability.
4. Option 4, Early OFTO Competition: We do not support this option. Similarly to option 3, there are risks with a transfer of responsibility from development to construction. This risk is more evident if there is a TO performing the DND, as it introduces more bodies into the process.
5. Option 5, Very Early OFTO Competition: In our view this is another feasible option, as it maximises the benefit of competition and allows a single organisation to carry out the design, construction and operation of the offshore transmission asset. This option does carry significant practical risks as OFTOs do not have the experience, and we are unsure whether they have the capability, to design, consent and build offshore transmission.
6. Option 6, Developer design and build, OFTO operate: This is our preferred option. This maximises competition as offshore generators have to compete with each other either through the Contract for Difference auctions or through the wholesale market (merchant). This is also the option where the offshore generators and OFTOs have the experience and capability to deliver.

We have developed these views based on the information that Ofgem has set out. However, we think there are multiple key areas where there needs to be more detail before we, or other stakeholders, can form fully justified positions. We have already mentioned several areas previously: the offshore/onshore split, and the scope of the work for the Detailed Network Design. One other key area will be the regulatory and licensing framework for the bodies under these delivery models.

In our view the framework on the TOs/OFTOs will be just as important as the delivery models and their roles. These frameworks often determine how the companies are shaped and incentivise their behaviours. An example is the OFTO's availability incentive, which through its cap and collar limits their exposure and lowers the cost of financing, but reduces the OFTO's incentive to perform maintenance. In our view we cannot accurately judge whether an organisation should be performing a role without understanding their potential framework and incentives in that role. Option 6 is an exception to this as the model that's most similar to the status quo.

These incentives and frameworks become even more important when we consider delivery and timeliness. Offshore wind developers have a strong, natural incentive to deliver the transmission infrastructure they build and develop on time, and in line with their offshore wind farms. Transmission companies do not face the same incentives, and it is important they are able and incentivised to develop and build their transmission assets quickly, under all of the models.

We are concerned that fully developing the frameworks set out above will potentially impact the PT2030 projects and cause delays. We would suggest that proposals along these lines would be better placed in the Enduring Regime.

Multi-Purpose Interconnectors Questions and Answers

Question 14: Do you think we are focusing on the right models at this stage, or are there other models we should be considering? Is it also necessary to consider the evolution of such MPIs from pre-existing assets? Ultimately, should Ofgem accommodate multiple MPI models (e.g. IC-led and OFTO-led) or just one? What factors influence your answer?

In considering this question for the Enduring Regime we believe that Ofgem should look at models that are wider than just OFTO or IC-led. Additional options could include a developer led model and a framework for MPIs that is MPI-led (i.e. not OFTO or IC-led).

Further, we note that one of the key principles Ofgem has highlighted is that the commitment that regulated infrastructure owners, ie. the IC or OFTO owner, should be 'at least as well off' as part of an MPI. We would like to understand whether Ofgem would extend that same commitment to the offshore wind farm developer that is connected to the MPI. MPIs should be projects that use infrastructure more effectively and bring down overall costs to consumers, however the design may negatively impact the offshore wind farm developer. In developing its framework Ofgem also needs to consider the impact on the offshore wind farm and ensure an equitable allocation of costs and benefits.

Question 16: What are the commercial, operational and regulatory factors that would drive a developers preference for either the OFTO-led or IC-led MPI model? and do you envisage a different usage of the component assets of an MPI depending on the MPI model?

There are several key factors that will drive an offshore wind developer's preference. Here we have focussed on the commercial and regulatory factors:

1. The market design of these models is under development and highly uncertain. Developers need clarity over a range of impactful elements such as wholesale revenue, imbalance prices, costs, duration and firmness of grid capacity, compensation for delays and outages, as well as eligibility for renewable support mechanisms and renewable certificates. Developers will prefer the model that gives clarity over these important elements.
2. MPIs are unbundled projects that can reduce the overall costs for consumers. The regulatory design must suit both the needs of the offshore wind farm and the offshore transmission infrastructure owner (whether it is an interconnector, OFTO or another organisation). The benefits and costs of hybrids must be appropriately shared between the parties involved in an MPI (as set out in our answer to question 14).
3. Developers need to be able to manage their price risk. Where the development of an MPI leads to an offshore bidding zone being implemented, this will create additional price risk which would need to be factored into the terms of any PPA for the offshore wind farm.

We currently don't have firm views on the operational aspects, but whichever model is used, developers will prefer that the infrastructure developer/owner has strong and suitable incentives, whether they are commercial or regulatory, to build the transmission infrastructure on time and ensure it is operational and reliable.

Question 17: How would the line to shore (L1) be used in practice and what would you consider to be the primary and secondary activities from a practical perspective? Please provide views for both the IC-led and OFTO-led models, highlighting any differences between L1 usages across the two models.

Our initial view is that it is likely that there is no neat delineation between the two activities. The nature of a MPI is that the cable is used for more than one purpose, and it will not necessarily have a primary activity, though it could depend on a project's circumstances.

Question 18: Are there any barriers within the current frameworks, such as definitions within the CUSC, SQSS or other industry codes, that might prevent the line to shore (L1) being classified as either an OFTO or an interconnector while undertaking other secondary activities?

We have not taken a thorough review, but our expectation is that the codes, such as the CUSC and the SQSS, will define and only reference either interconnectors, transmission infrastructure and connections as individual and separate pieces of infrastructure. We're not sure which areas this could be problematic for, but we expect they would align with the gaps we identified in question 16, such as around how transmission capacity is defined, and the UK's transmission charging methodology.

Question 21: Do you think the exemption provision with the Act offers any solutions to licencing MPIs within the current framework, even if only a temporary solution until a potential enduring solution is implemented?

We agree that an enduring solution may need to consider new definitions under legislation. We are not sure whether it is realistic to expect development of MPI's based on a temporary regime.

Question 22: Are there any aspects of the priority dispatch and curtailment arrangements, the TCA, or the cross-border trading arrangements that are adopted in UK that might influence the choice of MPI models?

We expect that the aspects listed above will have an impact on both the choice of MPI models and on the offshore wind developer. In our answer to Q16 we set out some of the key elements of the regulatory framework that need to be established. In developing these arrangements, Ofgem needs to consider how they will affect both the impacted MPI and offshore wind developers.

BEIS Question 1: What do you consider to be the key challenges to the establishment and operation of MPIs in the UK presented by current and proposed regulatory requirements applicable in EU Member States or other countries which MPI projects may connect with, or by the TCA? (e.g. regarding the efficient operation of MPIs under both the Home Market and Offshore Bidding Zone approaches). Are there further domestic challenges to these possible market design options

We see the potential for significant challenges in the establishment and operation of MPIs, where these projects are connected to European Member States, and may be subject to either Multi-Lateral Loose Volume Coupling (which is still to be defined) or some other form of cross-border trading arrangements.

We expect that the successful development of these projects will require a high degree of coordination and cooperation between the countries to which the projects connect. Any decisions taken on the cross-border trading arrangements for these projects will have a significant impact on both the MPI and offshore wind developers. We therefore request that offshore wind developers and transmission parties are equally consulted in developing the underlying regulatory framework.

If you have any questions on our response, please feel free to contact me at [REDACTED] or at [REDACTED].

Yours sincerely,

Aled Moses
Regulatory Affairs Advisor, UK Offshore