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Offshore transmission - Consultation on potential measures to support efficient network coordination

Consultation

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Overview:

Since 2009, Ofgem and the Department of Energy and Climate Change (DECC) have established a regulatory regime to develop efficient offshore electricity transmission networks. In early 2011, Ofgem and DECC jointly launched the Offshore Transmission Coordination Project (OTCP) to assess the potential costs, risks and benefits that may arise from the development of a more coordinated offshore and onshore electricity transmission network. The OTCP also considered whether any additional measures would be required to deliver coordinated networks and, if so, how these measures might work in practice.

A joint DECC and Ofgem conclusions report, published alongside this consultation, sets out the findings from the OTCP and the key actions that are being taken forward to address the potential barriers that were identified through the OTCP. This consultation sets out Ofgem's initial proposals to help ensure coordinated networks may be delivered through the competitive offshore transmission regime. Potential improvements include improvements to the network planning process and a proposed approach to anticipatory investment in offshore transmission infrastructure.

We welcome responses to this consultation by 26 April 2012.

Context

Electricity generated from offshore renewable energy sources is expected to make an important contribution towards the UK achieving its renewable energy targets by 2020. The Government's Renewable Energy Roadmap (2011) central range suggests that there could be between 11 to 18 gigawatts (GW) of offshore wind capacity by 2020. There is also substantial scope for further growth beyond this, with the Crown Estate Round 3 zones representing up to 32GW of additional offshore generation. Achieving such levels will require a timely, cost-effective and secure offshore electricity transmission network to transfer electricity generated offshore to the onshore network.

Ofgem and DECC have collaborated since 2005 to design and implement the regulatory regime for offshore electricity transmission. Under these arrangements, Ofgem is responsible for granting offshore transmission licences on the basis of a regulated competitive tender process. In July 2009 Ofgem commenced the first transitional tender round for offshore transmission assets, attracting almost £4 billion of investment appetite and generating substantial savings for generators and consumers. Ofgem is now in the process of running the second and last transitional tender round and has recently consulted on the design of tender exercises for the enduring regime.

For projects which have already been built or are currently under construction, the most efficient connection has generally been for each generation project to have a single, standalone connection to shore (a "radial" connection). However, as technologies develop and offshore generation projects get larger and more complex going forward, there is likely to be the potential for efficiencies from greater coordination between connections. For this reason DECC and Ofgem set up the joint OTCP in early 2011. The project considered the potential costs, risks and benefits from a coordinated approach to offshore network development and whether any additional measures would be required to deliver coordinated networks through the competitive offshore transmission regulatory regime.

Associated documents

- Joint Ofgem/DECC OTCP conclusions report, March 2012
- System Operator Incentive Schemes from 2013: Principles and Policy, January 2012 (Reference number 12/12)
- RIIO-T1 Implementing competition in onshore electricity transmission, December 2011 (Reference number 179/11)
- Offshore Electricity Transmission: Consultation on tender exercises under the enduring regime, December 2011 (Reference number 178/11)
- Offshore Transmission Coordination Project – Final Report for the Asset Delivery Workstream, December 2011
- Coordination in Offshore transmission – an assessment of the regulatory, commercial and economic issues and options, December 2011
- Coordinated Offshore Transmission Development Stakeholder Community, Open Letter, February 2011
- Government Response to Consultations on Offshore Electricity Transmission, December 2010 (Reference number 157/10)
- Offshore Electricity Transmission: Further consultation on the Enduring Regulatory Regime, August 2010 (Reference number 113/10)
- Providing additional flexibility in the enduring regulatory regime for offshore electricity transmission – Ofgem E-Serve/DECC open letter, July 2010
- Impact assessment on National Grid proposal CMP192: enduring user commitment (Reference number 19/12)

Contents

Executive summary

In early 2011, Ofgem and DECC launched the **Offshore Transmission Coordination Project (OTCP)** to examine if additional measures were required to ensure that offshore transmission networks could be developed in a timely and efficient way. Analysis was performed during the course of 2011, with support from expert advisors and industry groups.

Our high-level analysis has suggested that some parts of the offshore network could exploit a coordinated approach to developing the offshore transmission network, and this may result in an 8-15% overall cost reduction when compared to a radial approach (based on a baseline of £6bn to £24bn costs under a radial approach, across different offshore generation scenarios). However, the analysis also highlighted the risks of a coordinated approach leading to potential asset stranding, delays, and higher costs.

The OTCP conclusions report published alongside this consultation identifies six areas where additional measures may be required to help capture the potential benefits of additional offshore coordination. These are:

- Improving the network planning process
- Providing clarity on an approach to anticipatory investment (AI) within the offshore transmission regime
- Improving the planning and consenting process
- Clarity in the transmission charging and user commitment methodologies for coordinated offshore developments
- Clarity on regulatory boundaries, including international interfaces
- Addressing technology and supply chain issues.

While there are already significant commercial incentives for generators to pursue benefits from coordination using existing industry processes, the report found that there are potential barriers to generators in pursuing these opportunities, and may also lead to higher costs for consumers. This consultation invites views on Ofgem's analysis and initial proposals relating to two of the key issues identified: potential improvements needed to the process for planning an efficient network; and the approach to AI in offshore transmission infrastructure. The OTCP conclusions report sets out actions that are being taken across the remaining areas.

Planning an efficient, economic and coordinated network

The OTCP considered whether improvements are needed to facilitate the design of an efficient, economic and coordinated offshore transmission network. It found that potential improvements could be made to the system planning process to help achieve this outcome. This consultation sets out the important role of the National Electricity Transmission System Operator (NETSO) in this area, and considers whether improvements could be made to its role. In particular, it invites views on potential improvements to the Offshore Development Information Statement (ODIS) and notes that National Grid Electricity Transmission (NGET) is planning to consult on reforming ODIS and the onshore-focused Seven Year Statement (SYS) shortly.

Anticipatory investment

Achieving an economic, efficient and coordinated offshore transmission network may require some preparatory investment that goes beyond the needs of an immediate generating project. The lack of clarity around the approach to such AI in offshore transmission infrastructure has been highlighted as one of the key barriers to further development of a coordinated transmission network. This consultation therefore sets out our analysis and initial proposals for an approach to AI within the offshore regime.

It is important that these proposals operate effectively alongside the normal commercial process for developing offshore windfarms and the regulated enduring tender process for granting the offshore transmission licence to an Offshore Transmission Owner (OFTO), which is currently subject to a separate consultation process. In particular it will be important to minimise potential delays that may come from the introduction of any proposals taken forward.

We consider that the NETSO and offshore generators may have a key role in identifying the need for AI to support the development of an economic and efficient network through the connection offer process. Local Transmission Owners (TOs), including OFTOs, in the area could also have an important supporting role in this process.

Transmission Network Use of System (TNUoS) charging and user commitment arrangements will have an important role in determining how AI will be funded and how stranding risks are distributed between parties. We propose that these arrangements should follow cost-reflective principles, ensuring that potential benefits and costs and risks associated with the AI are reflected in the charges that users of the network are exposed to and the necessary securitisation arrangements. We propose that these arrangements would have an important role in Ofgem's assessment of the economic case for AI, given their impact on the extent to which consumers are likely to receive value for money as a result of AI being undertaken. There is a need to consider where further detailed changes or clarifications to the user commitment and transmission charging arrangements are required to support the AI approach.

We have set out a straw-man approach for a potential Ofgem AI assessment process. There could be two possible points where Ofgem could provide an assessment of the economic case for including AI within the scope of the next stage of work. The first assessment stage would cover pre-construction works and the second would cover construction works. This would be aimed at facilitating the tender process, by providing greater certainty in relation to our treatment of AI when undertaking our future assessment of costs. The second assessment stage would consider the economic case for whether or not it was appropriate to include AI within the scope of the construction works. As part of its consideration in all cases, Ofgem would have regard to whether or not undertaking the proposed AI would be in the interest of consumers.

AI may relate to more than one offshore generator, and may provide wider benefits for the network. We consider that the incentives for generators undertaking pre-

construction and construction works for such assets may not be as strong as when they are constructing assets purely for their own use. We are seeking views as to whether there is a need to enhance incentives on generators to ensure they construct such assets cost-effectively, to a high quality and in a timely manner or whether OFTO build should be the main focus for these assets. There may also be a role for local TOs undertaking pre-construction works for these assets.

Next steps

In light of respondents' views on this document, we will seek to publish conclusions after the consultation period closes. We will also be undertaking a detailed review of the legal framework and implementation routes for the initial proposals outlined, including considering how best to implement any necessary changes through the current industry codes and standards, tender regulations, licences and other supporting tender documentation. This consultation therefore does not represent Ofgem's final proposals on what changes may be required in order to accommodate AI within the offshore transmission regulatory regime.

We have also recently consulted on tender exercises under the enduring offshore electricity transmission regime. This consultation does not intend to prejudge the outcome of the enduring consultation. We will consider the outcome of both this and the enduring tender consultation in formulating our final proposals for measures to support coordination within the wider offshore transmission regulatory regime.

1. Introduction

Chapter summary
Outlines the purpose of, and background to, the consultation document. This includes providing further detail on the joint DECC and Ofgem Offshore Transmission Coordination Project (OTCP).

Purpose of this document

1.1. The UK Government's Renewable Energy Roadmap (2011[1]) central range suggests that there could be between 11 to 18GW of offshore wind capacity by 2020. There is also substantial scope for further growth beyond this, with the Crown Estate Round 3 zones representing up to 32GW of additional offshore generation[2]. The ongoing development of the GB offshore transmission regulatory regime seeks to embrace this potential.

1.2. The joint DECC/Ofgem OTCP has identified that a coordinated approach to the future development of offshore transmission assets may be desirable in some areas where economically beneficial. However, the OTCP has also suggested that there may be several barriers which could hinder such an approach.

1.3. This document outlines proposals for addressing some of the key potential barriers identified. These proposals are set within the context of the existing competitive offshore regime, which we are continuing to develop as the regime now moves from a transitional to an enduring basis.

1.4. This document considers how the process of planning the transmission network might be improved. We focus in particular on the NETSO's role in this process and whether ODIS and other documents produced by National Grid, as NETSO, can better support network planning. We are also consulting on a potential process for supporting anticipatory investment (AI) in the offshore regime.

Background information

1.5. The legal framework for the competitive offshore regime commenced in June 2009. This regime is being delivered in two parts: a transitional and an enduring regime.

[1] http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/re_roadmap/re_roadmap.aspx
[2] http://www.thecrownestate.co.uk/news-and-media/news/2010/the-crown-estate-announces-round-3-offshore-wind-development-partners/

1.6. The objectives of competitive tenders for offshore transmission licences are to:

- deliver fit for purpose electricity transmission infrastructure to facilitate the connection of offshore generation and realisation of significant carbon savings
- provide best value to consumers
- attract new entrants and sources of finance to the sector.

1.7. Offshore generators are not permitted to own and operate transmission networks. The transitional regime allows offshore generators to transfer ownership of completed transmission assets to a licensed OFTO, appointed through a competitive tender exercise administered by Ofgem. The transitional regime has attracted new entrants to the energy sector and delivered significant levels of investment, as well as establishing a well-defined and proven tender exercise.

1.8. The transitional regime is divided into two distinct tender rounds with the first tender round attracting almost £4 billion of investment appetite for £1.1 billion of transmission assets. We are now in the process of running the second and final transitional tender round. Projects that do not qualify for the transitional regime[3] will be subject to the enduring regime.

1.9. The enduring regime builds upon the transitional framework by offering greater asset design, procurement and construction opportunities by giving generators the option of choosing either OFTO or Generator build options. Transmission assets worth in excess of £14 billion[4] are likely to need to seek to qualify for the enduring regime.

1.10. The most recent Ofgem consultation on the enduring regime was published in December 2011[5] (hereafter referred to as 'the December 2011 consultation')

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[3] Projects seeking to qualify for tender exercises under the transitional regime must meet the qualifying project requirements set out within the Tender Regulations (http://www.legislation.gov.uk/uksi/2010/1903/contents/made) by 31 March 2012.

[4] The TNEI/PPA Energy: Asset Delivery Workstream (http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=2&refer=Networks/offtrans/pdc/pwg/OTCP/reports) estimates transmission investment costs of £14bn for Crown Estate Round 3 sites based on the National Grid "Gone Green" ODIS scenario. There are also additional projects in development as part of Crown Estate Round 2 and 2.5, and Scottish Territorial Waters Zones which mean that the pipeline could be significantly in excess of this figure.

[5] Available at http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=42&refer=Networks/offtrans/pdc/cdr/Cons2011 and discussed in more detail at Appendix 4.

and closed for responses on 17 February 2012. It focused on the proposed approach to OFTO build tender exercises and also proposed some refinements to the Generator build option.

1.11. The proposals for OFTO build and Generator build tender exercises set out in the December 2011 consultation are focused mainly on where the transmission assets to be constructed would be focused on providing the link for the generator to the National Electricity System (NETS). This consultation document invites views on whether the approach may need to differ for assets that are driven by the wider network benefits.

1.12. We expect to publish our response and further proposals on the enduring regime in April.

1.13. The proposals on coordination contained in this document do not prejudge the outcome of the December 2011 consultation.

What is coordination?

1.14. A key objective of Government and Ofgem is ensuring the development of the most economic and efficient overall GB transmission network, which provides best value for consumers.

1.15. Coordination refers to developing onshore and offshore transmission networks in a strategic and coordinated manner. This means offshore and onshore development will need to be considered together when looking at network development needs, in order to deliver the most economic and efficient overarching design.

1.16. In the context of offshore developments, coordination can be split broadly into three types, illustrations of which are given in Figure 1:

- **Between offshore generators** – coordination between the development of offshore transmission infrastructure between different offshore generation projects. This could be intra-zonal, i.e. coordination between different generation phases within one Crown Estate zone, or inter-zonal, i.e. coordination between generation projects across Crown Estate zones;

- **Onshore/offshore** – coordination between the development of onshore and offshore transmission infrastructure, where connections between offshore substations or from offshore substations to shore have wider network benefits by serving to mitigate the need for separate reinforcements of the onshore transmission network; and

- **International** – coordination between the development of offshore transmission infrastructure and interconnectors between countries.

1.17. In practice, the distinction between intra-zonal and inter-zonal coordination may not always be that relevant as there could be different companies developing phases within a zone. They might therefore face similar coordination challenges as those in relation to generation projects across zones.

1.18. The primary focus of this consultation document is intra-zone and inter-zone coordination (coordination for the purpose of other offshore generation), and onshore/offshore coordination (the development of assets that have wider network benefits).

1.19. The proposals in this document may potentially in future apply to coordination with cross-border interconnectors, though further work is needed in this area. The North Seas Countries' Offshore Grid Initiative (NSCOGI) is considering these issues in more detail. Alongside this, Ofgem and DECC will be undertaking work during 2012 to consider whether the interface between the offshore and interconnector regulatory regimes needs clarification.

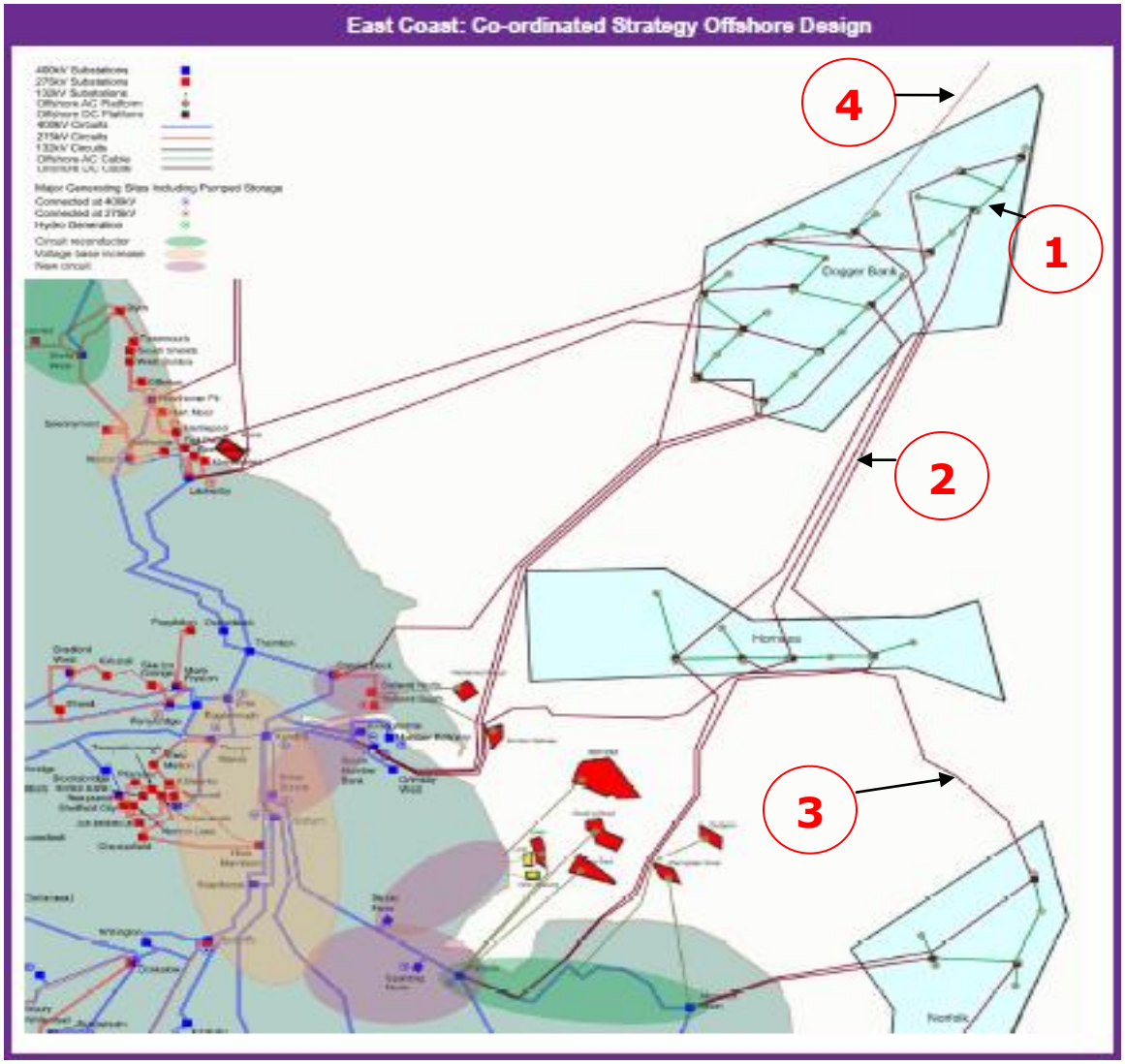

Figure 1 – Illustration of the four types of coordination (source: ODIS 2011)

Key:

1. Intra-zonal coordination
2. Inter-zonal coordination
3. Onshore/offshore coordination
4. International coordination

Offshore transmission coordination project (OTCP)

1.20. For many offshore generation projects that have already been built or are currently under construction, the most efficient connection has generally been for each generation project to have a single, standalone connection to shore (a "radial" connection). However, as technologies develop and offshore

generation projects get larger and more complex going forward, there may be potential for efficiencies from greater coordination between connections.

1.21. In response to the joint Ofgem/DECC August 2010 consultation on the enduring offshore regime, stakeholders expressed strong support for the principle of a long-term, coordinated approach to offshore transmission development where this did not have associated cost or timing implications for generation project developers. Most respondents were of the view that while the offshore regime would not create barriers to coordination, the current incentives are not sufficient to bring about significant levels of coordination in practice. Whilst there are incentives on parties to seek coordinated outcomes of their own accord, the project identified a number of barriers, as well as other constraints that are important when considering the most economic and efficient network configuration.

1.22. In an open letter published on 21 October 2010, DECC and Ofgem announced an intention to undertake further work to consider the costs, risks and benefits of coordination and whether any additional measures would be required to deliver coordinated networks through the offshore regime. A joint DECC and Ofgem project (OTCP) was set up in early 2011 to take this work forward.

1.23. To support the OTCP, Ofgem commissioned consultants TNEI/PPA Energy and Redpoint to provide an independent review of the two main work areas: transmission asset delivery; and the regulatory and commercial barriers to coordination[6]. The project has also benefited from extensive stakeholder input through an Offshore Transmission Coordination Group (OTCG), offshore transmission coordination expert workshops and engagement with the wider offshore transmission coordination stakeholder community[7].

1.24. DECC also commissioned consultants SKM and CEPA to provide a comparative assessment of different countries' offshore regimes. This provided sectoral and comparative international data which was useful in informing the conclusions of the OTCP.

[6] Available at http://www.ofgem.gov.uk/Networks/offtrans/pdc/pwg/OTCP/reports/Pages/reports.aspx

[7] Further information available at http://www.ofgem.gov.uk/Networks/offtrans/pdc/pwg/OTCP/Pages/OTCP.aspx

OTCP conclusions report

1.25. DECC and Ofgem have published an OTCP conclusions report alongside this consultation[8]. This contains the detailed conclusions of the project, of which the key high-level points were as follows.

Is coordination desirable?

- The benefits of coordination vary between different projects, depending on factors such as distance from shore, proximity of other wind farms and network development reinforcement needs. It is likely that there will be a number of projects where a radial connection remains optimal.

- For projects where a coordinated approach is likely to be more efficient, there will often be a need for some AI to allow the coordinated configurations to develop. This may result in a risk of asset stranding (being temporarily or permanently underutilised).

- TNEI and Redpoint's analyses suggested that coordination has the potential to deliver overall savings of 8 - 15% (£0.5-3.5bn, relative to a baseline of £6bn-£24bn costs) by 2030 in net present value terms when compared to a solely radial solution.

- Cost savings are highly dependent on the expected timing and cost of new technology developments, particularly the emergence of larger capacity high voltage direct current (HVDC) technologies.

- There are high levels of uncertainty surrounding the volume and timing of long-term offshore generation build out. This can be seen from the range of generation scenarios outlined in the UK Government's Renewable Energy Roadmap.[9]

- The analysis supports an incremental, evolutionary approach to network development rather than building a large-scale, meshed network from the outset.

Potential barriers to coordination

1.26. The OTCP identified six potential barriers to coordination, as detailed in Table 1.

[8] Available via http://www.decc.gov.uk

[9] Available at http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/re_roadmap/re_roadmap.aspx

Barrier	Description	Proposed solution
Planning an efficient and economic network	Potential modifications needed to allow the NETSO to better identify coordination opportunities through the connection offer process and to help ensure that transmission planning documents sufficiently inform short-to medium-term developments	Ofgem is consulting in this document on potential enhancements to the NETSO's role in specifying coordinated offshore transmission needs and improvements to network documents
Anticipatory investment (AI)	Currently no explicit process or guidance on how AI for offshore transmission infrastructure will be treated by Ofgem, creating uncertainty	Ofgem is consulting in this document on an approach to AI within the offshore transmission regime, including how it should be identified, taken forward and funded
Consenting	Current Government guidance appears to rule out consenting of anticipatory assets	Government to revise guidance on consenting of associated developments to enable these types of assets to be considered
Risk-reward profile	Uncertainty around how security and transmission charging requirements for generators will work for coordinated offshore networks	Industry-led changes, subject to Ofgem approval, to provide clarified, fair and efficient charging and user commitment methodologies for coordinated offshore developments
Regulatory boundaries	Lack of clarity on regulatory treatment of assets that involve combinations of onshore reinforcement, offshore generation connection and interconnectors	Ofgem to provide improved clarity on regulatory boundaries as appropriate. For the offshore-interconnector boundary, NSCOGI, the British Irish Council work and DECC work on renewable trading mechanisms will also be relevant
Technology	Some technologies necessary for coordination are not yet commercial; questions around interoperability	The joint conclusions report sets out current standardisation and innovation funding, and further work to build on this

Table 1 - Summary of potential barriers to coordination (source: OTCP conclusions report)

1.27. Introducing greater clarity around AI has been identified as a key priority and is the main focus of this consultation. This consultation also focuses on

potential improvements to the process for planning an efficient electricity transmission network.

1.28. Further details on the other potential barriers highlighted in Table 1, and DECC and Ofgem's proposals to address them can be found in the OTCP conclusions report.

Structure of this document

1.29. Each chapter in this document sets out for comment our proposed approach and questions on particular areas where views are being sought from stakeholders. This document has four chapters.

- Chapter 2 sets out our framework for the design of a coordinated network
- Chapter 3 sets out our views on AI
- Chapter 4 set out next steps

1.30. Additional information is also available in the appendices.

Responding to this document

1.31. We welcome comments from respondents on all issues in this document. We have also highlighted specific issues in relevant chapters for which we would like views.

1.32. Whilst we are open to discussions with stakeholders, we would encourage formal feedback via a response to this consultation. All responses should be received no later than **26 April 2012** and sent to: Offshore.Coordination@ofgem.gov.uk

2. Planning an efficient, economic and coordinated network

Chapter Summary

This chapter considers potential improvements to the process for designing an efficient, economic and coordinated offshore transmission network. It looks in particular at the NETSO's role in this process and whether ODIS and other documents produced by the NETSO can appropriately and sufficiently support network planning.

Question box

Q 1: What are your views on whether:

a) the connection process (including the relevant industry framework) supports the design of an efficient and coordinated network?
b) the NETSO needs further powers to develop an efficient network?
c) there are any barriers to the NETSO taking on an enhanced role in network development?

Q 2: Do you agree with the proposed objectives for a reformed network planning document? Would other changes be useful?

Introduction

2.1. An effective system planning approach is key to ensuring that the transmission network develops in an economic and efficient manner. In this sense, we consider an optimised network to be one that is economic and efficient for the network as a whole – i.e. one that takes into account user needs across the entire network, as opposed to one that is driven by what may be desirable for individual projects, and that minimises the costs in meeting these needs.

2.2. There are a large number of factors - primarily uncertainty in both onshore and offshore generation build-out and technology availability - that mean it is not possible to set out with certainty an effective blueprint or fixed plan for how the network needs to develop over time. Instead, it is important that the system planning process for network development provides the right balance between ensuring a joined-up, forward looking view of needs and ensuring that plans retain sufficient flexibility and robustness in the face of uncertainty.

2.3. To help achieve this, DECC extended the scope of NGET system operator role offshore in 2009. As such, NGET, in its system operator (NETSO) role, is responsible for overall system planning as well as the day-to-day

management of the flow of electricity across the NETS, onshore and offshore. It also extended the role of the NETSO for coordinating new connections to the transmission system offshore. [10]

2.4. Ofgem also implemented new obligations in NGET's licence in August 2009[11] that require NGET to produce an annual ODIS. This statement is required to set out a range of future scenarios for the development of the offshore transmission system based on information available to NGET. The purpose of this statement is to provide information about the likely impact of possible future scenarios on the development of the NETS.

2.5. During the course of the OTCP, our analysis and stakeholder feedback has suggested that there may potentially be scope for improvements to the system planning process. This chapter invites views on this, sets out further proposed Ofgem work on the NETSO role and considers specific potential reforms to ODIS.

The role of the NETSO

2.6. In the March 2009 Ofgem/DECC[12] consultation we noted that we would seek to ensure that the NETSO was proactive in its approach to facilitating offshore network development. As part of this, we expect the NETSO to be ensuring that connection agreements represent the most economic and efficient means by which to connect new generation to the network.

2.7. We therefore welcome the approach that the NETSO has been taking to identify where coordination could be beneficial through the connection offer process. Coordinated connection offers have already been made to generators. Such connection offers either seek to identify where necessary wider network reinforcements may be best delivered through offshore developments, and/or prepare for future phases of expected transmission investments.

2.8. Analysis and stakeholder feedback through the OTCP has suggested that there may potentially be improvements to the role of the NETSO in system planning which could help ensure that the most efficient network develops. For example, questions have been raised as to whether the NETSO needs to have a greater ability to specify where offshore assets should be shared, or where they should be oversized to allow for potential future connections.

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[10] Section 9 of the Electricity Act 1989 obliges Transmission Licence holders – including NGET - to develop an efficient, co-ordinated and economical system of electricity transmission and to facilitate competition in the supply and generation of electricity. Section 91 of the Energy Act 2004 extends NGET's system operator (SO) activities offshore.

[11] http://www.ofgem.gov.uk/Networks/offtrans/pdc/cdr/cons2009/Documents1/C4.PDF

[12] Government Response to 'Offshore Electricity Transmission – A further Joint Ofgem/DECC Regulatory Policy Update', March 2009.

2.9. We would therefore like to invite views on whether the connection offer process, and importantly the NETSO's role in this, is sufficient to ensure that network development needs are addressed in an efficient and timely manner.

2.10. We also note that the NETSO might potentially play a role in ensuring the interoperability of different offshore transmission components. The NETSO has an obligation to ensure that relevant industry codes continue to be fit for purpose in delivering an efficient, economic and coordinated, network. It may be appropriate that the industry codes and standards, in time, include standards to ensure that different offshore circuits would be able to be linked together in future.

2.11. As noted in the OTCP conclusions report, there are a number of industry groups currently considering possible standards for offshore technologies. DECC and Ofgem therefore do not consider any further action is required at this time, but will monitor whether adequate progress is being made.

2.12. A further question that has been raised through the OTCP is whether NGET is sufficiently incentivised to undertake effective system planning across onshore, offshore and cross-border developments. For example, some stakeholders have questioned whether an independent design authority could instead play a role in central planning, design and coordination.

2.13. Ofgem will be undertaking a project during 2012 which will consider whether improvements are needed in the longer-term to the NETSO's role and incentives as central system planner across the whole of the NETS. This will cover questions that have been raised during the OTCP about whether the NETSO has appropriate incentives for effective system planning, looking across onshore, offshore and cross-border developments. It will also look at whether the NETSO's overall responsibilities in relation to coordinating the NETS need to be clarified, potentially through its licence conditions.

2.14. This project will be undertaken alongside the joint DECC and Ofgem project considering potential conflicts of interest for NGET arising from its proposed role in implementing the Electricity Market Reform (EMR) proposals.

2.15. Ofgem are also consulting on proposed objectives, policy and principles for the regulation of GB gas and electricity system operators, which will cover an eight year period from April 2013. The focus of that consultation is on incentives for real time and day-to-day system operator functions such as balancing and constraint management, including schemes relating to System Operator (SO) outputs and cost incentives.[13]

[13] See http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?file=SO 2013 Principles.pdf&refer=Markets/WhlMkts/EffSystemOps/SystOpIncent

Q 1: What are your views on whether:
a) the connection process (including the relevant industry framework) supports the design of an efficient and coordinated network?
b) the NETSO needs further powers to develop an efficient network?
c) there are any barriers to the NETSO taking on an enhanced role in network development?

Making network planning documents fit-for-purpose

2.16. A repeated suggestion during the course of the OTCP was for the need for a vision or roadmap of how the network might evolve but that any such statement could not, and should not, be a blueprint of what needs to be built.

2.17. One of the key issues is whether the ODIS, prepared by the NETSO in consultation with industry, could provide a better reflection of how the network might feasibly evolve over time in the face of uncertainty. This could include setting out in more detail the key steps in developing the network in different regions and the level of uncertainty (including stranding risk) at the key decision points.

2.18. There is also a wider question about how ODIS interacts with, or could be informed by other network planning statements and working groups, and whether they could benefit from reform. Key amongst these are:

- The National Electricity Transmission System (NETS) Seven Year Statement (SYS), which contains information on NGET's demand forecast, contracted generation, plant margins, system performance / capabilities with a view to informing users of the NETS in assessing opportunities for making new or further use of the NETS in GB.

- The Ten-Year Network Development Plan (TYNDP), a regular plan setting out electricity transmission infrastructure investments required on a pan-European basis, and associated regional plans which will include interconnector and North Sea grid projects and aim to support decision-making processes such as those under the proposed Energy Infrastructure Package. In addition, there is a European group looking at Electricity Highways with a longer time horizon.

- The Electricity Networks Strategy Group (ENSG) that has reported on what onshore transmission reinforcement might be required out to 2020 and beyond.

Figure 2 summarises the coverage of the documents.

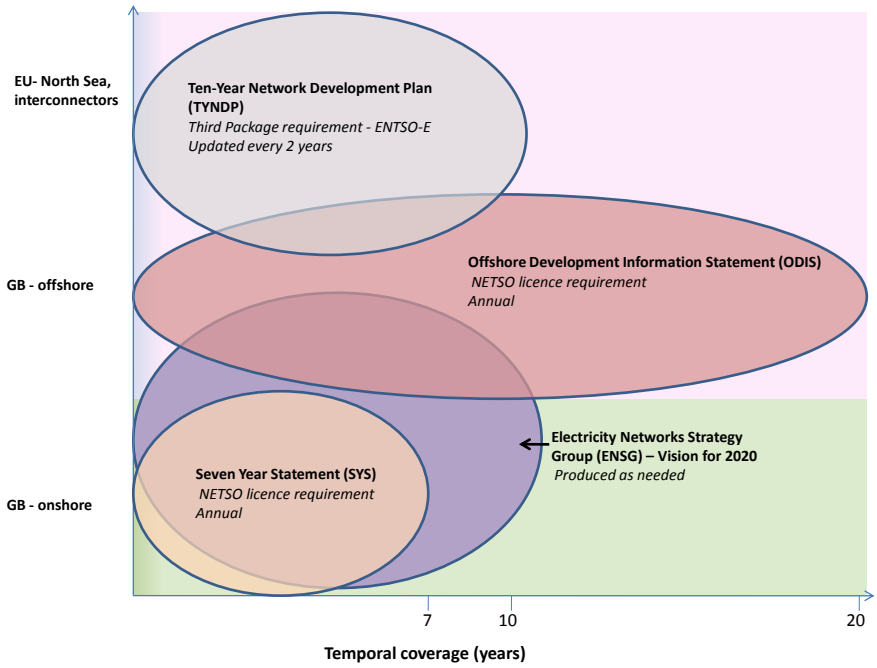


Figure 2: Current GB and EU transmission network planning documents

2.19. We are considering the relative strengths and weaknesses of these documents and the opportunities that may exist to develop a more holistic network plan that takes on board the suggested improvements made to date. NGET has also raised with us a proposal to reform ODIS and the SYS into a single document, and propose to consult more widely on these changes in the near future.

2.20. We consider that there are likely to be benefits from reforming ODIS and SYS and merging them into a single document, and propose that an improved, combined network planning document should:

- Have better links between the long-term plan and short- to medium -term decisions, by setting out key development stages to achieve the long-term vision and how these account for uncertainty.

- Ensure that generation and demand scenarios are based on a credible range of assumptions, which are able to adequately test the robustness of different network development options. These scenarios should be centred around NGET's "best view" of likely developments, clearly setting out the degree of certainty around generation developments and also take into account Government targets and ambitions, given that generation build-out is strongly impacted by the level of subsidy set through Government policies.

- Enable a more holistic view of long term network planning across onshore and offshore needs. We also consider there is a need for improved coverage of potential cross-border developments. This combined document might also provide the basis for the European TYNDP.

- Have a main focus on a ten-year time horizon, covering the RIIO[14] and TYNDP time horizons and the Government's 2020 targets, but also include a "lighter touch" forward look for the following ten-year time horizon.

- Involve greater external and/or independent scrutiny and testing of the inputs and results, potentially utilising fora such as the ENSG, as well as wider stakeholder consultation.

2.21. It is likely that Ofgem would need to change NGET's licence, focusing on the ODIS and SYS licence obligations, to allow NGET to take forward a reformed network planning statement. We are also considering what steps may be warranted to allow NGET to produce a reformed network planning document this year, which could entail a delay to the normal publication dates of ODIS and SYS.

2.22. We would formally consult on any licence changes in due course, but at this time would welcome high-level views on how best to make improvements to ODIS and the other planning statements, and particularly whether you agree with the key objectives for a reformed document outlined above.

2.23. We expect NGET to take these objectives into account in their proposed forthcoming consultation process. We encourage stakeholders to engage in the NGET consultation, as these responses will be important when we consider whether to take forward changes to NGET's licence obligations relating to ODIS and SYS.

Q 2: Do you agree with the proposed objectives for a reformed network planning document? Would other changes be useful?

[14] RIIO-T1 (formerly known as TPCR5) will be the first transmission price control review to reflect the new regulatory framework resulting from our RPI-X@20 review. The RIIO model (Revenue = Incentives+Innovation+Outputs) builds on the success of the previous RPI-X regime, but better meets the investment and innovation challenge by placing much more emphasis on incentives to drive the innovation needed to deliver a sustainable energy network at value for money to existing and future consumers.

3. Anticipatory investment

Chapter summary

Coordination will involve building assets that go beyond the needs of an immediate generating project so as to develop a more economic and efficient overall network. This chapter sets out our analysis and a potential straw-man for anticipatory investment (AI) within the offshore transmission regime, and invites views on these.

Question box

Q 3: Do you agree with our initial proposal for a definition of AI and that the types of AI set out are those that need to be captured in an approach to AI?

Q 4: Do you agree with our initial proposed objectives and regulatory design principles for an approach to AI? Are there some which you see as more important than others?

Q 5: What are your views on use of the connection application process as the platform for identifying AI opportunities? Could there be a need for AI to be identified outside of the formal connection offer process?

Q 6: Do you envisage that changes to industry codes and licences are necessary to enable the connection offer process to identify AI?

Q 7: Are there barriers to cooperation in connection offers being agreed where a development involves more than one generator? What actions do you consider are warranted to address these?

Q 8: Are there other parties that should be able to identify opportunities for AI?

Q 9: What changes may be needed to ensure that assets that provide wider network benefits are designed, constructed and operated to provide a longer asset lifetime?

Q 10: What are your views on whether a longer revenue stream for assets that have wider network benefits could create better value for consumers?

Q 11: What are your views on the best way to deal with possible interaction between assets with differing lengths of tender revenue streams?

Q 12: Do you agree with these high-level user commitment and charging principles for AI?

Q 13: What areas of the transmission charging regime may need to change to facilitate AI in the offshore transmission network?

Q 14: Is there a need for greater, earlier clarity on how including AI within the scope of works might be treated under our assessment of costs?

Q 15: What are your views on the potential form of these Ofgem assessment stages? Should it be optional for generators to go through the gateways where they would be undertaking the subsequent works?

Q 16: Do you agree with the proposed high-level criteria for use by Ofgem if considering whether AI would be economic and efficient?

Q 17: What are your views on the appropriate timing of the possible Ofgem assessment stages?

Q 18: What information should in your view be provided as part of any published guidance that supports AI approval?

Q 19: Should there be additional requirements to share information with Ofgem to help streamline Ofgem's assessment of AI for project? What information should be included?

Q 20: What are your views of the different options for who should undertake pre-construction works for assets that are driven by wider network benefits?

Q 21: Could OFTOs potentially have a role in undertaking pre-construction works for assets significantly driven by wider network benefits? How might this work?

Q 22: Do your views of the attractiveness and feasibility of an early OFTO build option differ for assets that are driven by wider network benefits?

Q 23: Are there changes that can be made to enhance the incentives on offshore generators in undertaking pre-construction and construction works for assets that are driven by wider network benefits?

Q 24: What would be the impact on the attractiveness of the Generator build option for assets that have wider network benefits if additional delivery incentives are incorporated? Should the OFTO build option be the main focus for this type of asset?

Q 25: What are your views on how any distinction between "offshore generator focused" and "wider network benefit" assets should be made?

Q 26: What role could commercial contractual arrangements have in ensuring that pre-construction assets are passed to the relevant party and the first developer can recover their costs?

Q 27: What changes may be needed to support the process? What would be the impact of requiring an OFTO to hold assets for future generators?

Q 28: Will commercial arrangements and industry codes and licences provide sufficient access rights for shared assets? If not what changes may be needed to support the process?

Q 29: Are there any other issues with shared assets that need to be considered?

Introduction

3.1. To date AI in relation to onshore transmission has been dealt with under the established Transmission Investment Incentive (TII) process. It will be considered in future under the strategic wider works process under RIIO-T1. The onshore arrangements are described in more detail in Appendix 4.

3.2. There is not currently a clear framework for how AI will be treated under the enduring offshore regulatory regime. This chapter therefore sets out potential measures to support AI within the offshore regime, covering:

- The types of AI that might be needed to support coordination
- Proposed principles to inform the potential approach to AI
- How AI opportunities might be identified
- How AI might be funded, including particularly the role of transmission charging and user commitment arrangements and changes that may be needed to facilitate coordination
- Whether there is a need for further measures to support coordination, including particularly whether there is a need for Ofgem assessment stages to provide earlier clarity on the likely treatment of including AI within the scope of works when we later undertake our assessment of costs
- Which parties could have a role in undertaking pre-construction and construction of assets that include AI, particularly where the investment is driven by the wider network benefits it would provide
- Based on these, a proposed potential approach to AI in offshore transmission infrastructure, including setting out proposals for the roles and responsibilities for different parties at different stages

3.3. These proposals would sit alongside and form part of the enduring OFTO tender regime. The analysis in this chapter is based on the proposals set out in the December 2011 consultation but are not intended to pre-judge Ofgem's decisions on those issues. We may need to further develop the proposals based on the analysis set out here, if the conclusions of the December 2011 consultation differ from the proposals set out in this consultation.

3.4. Further details on the possible process and assessment of different options and further details are included in an initial impact assessment at Appendix 2.

Types of AI that may be required to support coordination

3.5. Analysis undertaken during the OTCP has suggested that a more coordinated approach to connections could be beneficial for some future offshore generation projects, and that achieving these configurations will often require some AI to be undertaken. This does not mean that AI will be needed for all projects going forward, particularly where the most efficient outcome continues to be a point-to-point connection.

3.6. The potential for AI to contribute in some cases to an economic, efficient and coordinated network means that there could be a number of direct and indirect benefits for generators and consumers from facilitating AI. The impact assessment at Appendix 2 sets out further detail on the rationale for providing an approach to support AI.

3.7. Where it is required, AI could take the form of an expanded scope of development works for a project, either at the pre-construction or construction stages. As discussed in Chapter 1, the type of investment that might incorporate AI can be broadly split into two categories:

- Investment **focused on coordinating the connection of offshore generation**, to support more efficient connections for different offshore windfarm phases, sites or zones[15]. Possible examples of AI relating to pre-construction works for this type of connection could be where one generator undertakes environmental impact assessments, engineering surveys or land purchases that support later phases of its windfarm or other windfarms sites/zones in the area. Possible examples of AI relating to construction works could be building substations or cables that are oversized relative to the immediate generation phase being connected.

- Investment that is significantly driven by the **wider network benefits** it would provide, through mitigating the need for separate onshore reinforcement of the NETS. This would also provide additional connections for offshore wind generation, though may be additional to generators' minimum requirements. Possible examples of AI relating to this type of investment could again include both pre-construction and construction works, but in this case to facilitate the development of an asset that helps to increase power flows across different areas of the NETS as well as the connection of offshore windfarm(s).

[15] We are currently consulting on how to define the terms 'phase', 'site' and 'zone'. Here, we take 'site/zone' to mean: '*the transmission assets within a site or zone licensed by the Crown Estate* and take 'phase' specifically to mean: '*a grouping of transmission assets to be built out over a period of time, where the grouping is defined by certainty on build out; where certainty relates to a Final Investment Decision and key contractual commitments'*, as proposed by the December 2011 consultation.

3.8. Based on these types of AI that may be needed, we propose that the most appropriate definition for AI in the context of offshore transmission could be "**capital expenditure that supports anticipated future network requirements, rather than the immediate needs of a single offshore generation phase**".

3.9. In distinguishing between pre-construction and construction works, we are basing this on the proposed definition of pre-construction works that we set out in the December 2011 consultation:

- Carrying out environmental impact assessments and stakeholder consultation in relation to the OFTO works
- Obtaining necessary planning permissions
- Obtaining necessary landowner consents (leases, easements, wayleaves, etc)
- Carrying out engineering surveys (onshore and offshore) in relation to the OFTO works (these could include sea-bed geophysical and geo-technical surveys and metocean surveys)
- The high level engineering design needed prior to undertaking the activities described above
- Any economic analysis in support of this high level engineering design.

3.10. Construction works refers to the procurement and manufacture of transmission assets and the period through to completion of construction of those assets.

Q 3: Do you agree with our initial proposal for a definition of AI and the types of AI set out are those that need to be captured in an approach to AI?

Design principles

3.11. We have set out potential high-level objectives and design principles to inform the approach to AI in offshore transmission infrastructure. The aim of applying these principles would be to help deliver Ofgem's primary objective

of protecting the interests of present and future consumers[16]. The potential principles are:

- To build on the existing offshore regulatory framework, so as to retain the benefits of competition and to minimise disruption in implementation
- To provide certainty and appropriate incentives to ensure that coordination is taken forward in cases where this contributes to the most economic and efficient network development given overall supply and demand needs
- To recognise that there may be value in making some moderate early investments that are aimed at keeping longer-term options open
- To ensure consumers are likely to receive sufficient benefits where they are likely to underwrite the costs of AI
- To ensure that parties developing transmission assets are sufficiently incentivised to undertake the work economically and efficiently, to high standards and in a timely manner
- To provide a transparent regulatory framework that has flexibility to allow the process to be adapted to reflect case by case differences in the circumstances of individual projects

Q 4: Do you agree with our initial proposed objectives and regulatory design principles for an approach to AI? Are there some which you see as more important than others?

Identification of AI

3.12 We propose that initial identification of AI need and type should occur through the existing connection application and offer process. The process allows for the NETSO, generators and local TOs (which could include OFTOs in the area) to contribute to the identification of the most economic and efficient means to connect new generation to the network. This would including identifying where there is a case for building an anticipatory element into the scope of works, whether these are driven by the potential for connecting other offshore generators or for wider system benefit.

[16] In this context, the interests of gas and electricity consumers are their interests taken as a whole, including their interests in the reduction of greenhouse gases and in the security of supply of gas and electricity to them.

3.13 To achieve such an outcome there may be a need for the NETSO to have increased ability to feed into the high-level specification (e.g. capacity levels, additional circuit breaker bays on an offshore platform) for offshore assets.

3.14 A further key issue here is how "coordinated offers" to a generator or group of generators will be formed to identify a coordinated build requirement. Such offers might lead to situations where one generator is reliant on another generator constructing assets to allow both to be connected to the NETS in a coordinated fashion. We welcome your views on whether standard commercial arrangements and the Connection and Use of System Code (CUSC) can support such activity, and whether these issues need to be considered further as part of the development of the AI process.

3.15 We are not proposing that any other parties have a formal role in identification of AI as only generators, the NETSO and relevant existing onshore TOs or OFTOs in an area have a formal role in the connection offer process. We would welcome views on whether other parties should have a role in identifying AI and how this would best be incorporated into the process. We would also welcome views on whether there might be a need for AI to be identified outside of the formal connection offer process.

Q 5: What are your views on use of the connection application process as the platform for identifying AI opportunities? Could there be a need for AI to be identified outside of the formal connection offer process?

Q 6: Do you envisage that changes to industry codes and licences are necessary to enable the connection offer process to identify AI?

Q 7: Are there barriers to cooperation in connection offers being agreed where a development involves more than one generator? What actions do you consider are warranted to address these?

Q 8: Are there other parties that should be able to identify opportunities for AI?

Design life of assets that have wider network benefit

3.16. The current revenue stream for offshore transmission assets is set for 20 years, reflecting the design life of the generation assets. However, the potential technical lifetime of transmission assets is generally thought to be longer (perhaps in excess of 40 years).

3.17. Where transmission assets are being built in part to provide wider network benefits, such as increased power flow across the onshore network, then there is greater certainty that the useful life of the assets will extend beyond 20 years.

3.18. As decisions on the design, operation and maintenance of transmission assets have an impact on their likely lifetime, we would be interested in views on what changes may be needed to ensure that such assets will be developed to ensure that they are able to provide a longer lifetime. For example, this could potentially include the need for the NETSO to have an ability to set out requirements as to asset design life in the connection offer.

3.19. We believe a consequential impact that might need to be considered is the length of the tender revenue stream. We sought views in the December 2011 consultation on whether the 20 year revenue stream provides the best value for consumers under the enduring regime and are currently considering responses. In the interim, we would be interested in views on this question specifically in relation to assets that are being built that would be likely to provide wider network benefits beyond the 20 year period.

3.20. We note that introducing differential length of revenue streams for offshore transmission assets might introduce additional complexity. For example, it is possible that assets that are receiving an extended revenue stream may in part be relying on assets that have a 20 year revenue stream. An alternative might be that some generator-driven assets that would form part of a channel for power transfers between different parts of the onshore network would also have an extended revenue stream. This would mean that these assets would need to be designed, built and maintained in order to give confidence that their technical lifetime would meet or exceed the duration of the tender revenue stream. We would welcome views on this issue.

Q 9: What changes may be needed to ensure that assets that provide wider network benefits are designed, constructed and operated to provide a longer asset lifetime?

Q 10: What are your views on whether a longer revenue stream for assets that have wider network benefits could create better value for consumers?

Q 11: What are your views on the best way to deal with possible interaction between assets with differing lengths of tender revenue streams?

Funding of AI

3.21. The TNUoS network charging and user commitment arrangements for AI in offshore transmission infrastructure will play an important role in facilitating the development of a coordinated offshore transmission network. This is because they impact significantly on different parties' incentives to undertake AI by providing the basis for allocating costs, benefits and risks between generators and consumers.

3.22. Table 2 summarises the key parties that benefit from different types of AI and therefore our views on the appropriate high-level principles for user commitment and charging arrangements for AI. For user commitment,

changes proposed by NGET for an "enduring"[17] user commitment regime for generation through CUSC modification proposal 192 (CMP192), may help address concerns raised by some stakeholders that the current rules act as a barrier to offshore coordination.

3.23. User commitment is made more complex offshore because the generator has the option of a Generator build or OFTO build. Under the Generator build option offshore transmission investment is paid for directly by the generator and the key generator risk is the ability to recover costs through the transfer value to an OFTO. In the case of an OFTO build option the generator will need to secure at least part of the transmission system investment through user commitment rules, as is the case onshore.

3.24. CMP192's proposed changes to the user commitment arrangements may help address concerns raised by some stakeholders that the current rules act as a barrier to offshore coordination. However, we consider there may be scenarios where proposed CMP192 arrangements may lead to consumers being exposed to offshore asset stranding risks from AI. An example of where this might occur is with generator-driven AI where the phasing of OWG projects that support the needs case for the AI are elongated. Potential perverse incentives that may arise under such circumstances and how they might be mitigated are the subject of our recently published impact assessment and consultation on CMP 192.[18]

3.25. As discussed further in the next section, whether generators are providing user commitment for AI that they stand to benefit from – and therefore the level of stranding risk that is passed on to consumers – could be an important element of any early Ofgem assessment of AI. Depending on the outcome of our consultation on the enduring arrangements, we see this as something that may impact on our ability to agree the economic case for some AI opportunities. We will provide a further update once a decision has been made on CMP192.

3.26. At present, there is a lack of clarity on how these arrangements will work for coordinated offshore developments, and whether they will achieve these objectives. Evidence has suggested that this has been a significant barrier to generators accepting connection offers that include coordinated elements.

[17] Existing arrangements are interim and due to expire in April 2012
[18] For more detail, please see Chapter 4 of Ofgem's CMP192 impact assessment.

Table 2: Benefits and high-level user commitment and charging principles for AI

Party	Potential benefits from AI	User commitment	TNUoS charging
Offshore-generator driven AI			
Lead offshore generator	System security benefits from a coordinated system and might lead to lower TNUoS charges because of lower transmission investment costs both onshore and offshore and a resilient connection to export power to the market, particularly if AI is for later phases of own development.[1]	Would expect lead generator to incur user commitment liability for offshore AI that they stand to benefit from and where they have best control over risk, i.e. if AI is for later phases of its own development.	Would be expected to fund their share of transmission capacity consistent with cost reflective charging principles.
Other offshore generators	System security benefits from a coordinated system and might lead to lower transmission investment costs both onshore and offshore and a resilient connection to export power to the market .[1]	Would expect other generators to also incur a user commitment liability for AI that they stand to benefit from and where they have best control over risk.	Would be expected to fund their share of transmission capacity consistent with cost reflective charging principles.
Wider network users [2]	Little direct benefits although consumers might benefit indirectly from lower transmission investment costs both onshore and offshore and more timely connections over time.	Should not be exposed to significant stranding risk given that they do not stand to directly benefit.	Should not face costs through charging where these should be charged back to generators based on cost reflective principles.
AI for wider network purposes			
Offshore generators	Offshore AI for wider network could facilitate other generator connections and might lead to lower transmission investment costs both onshore and offshore, a more economic trade off between transmission investment, potentially lower constraint costs and improved system security overall.[1]	Would not expect offshore generators to incur full user commitment liability for offshore AI where other users benefit from the investment.	Contribution to the funding of wider works according to cost reflective charging principles.
Wider network users [2]	Potentially provides security benefits for the wider transmission network (onshore and offshore), lower transmission investment costs both onshore and offshore, and a more economic trade-off between transmission investment and potentially lower constraint costs.	Expected to carry part of the liability for AI either through TNUoS charges or user commitment for wider works.	Offshore AI expected to be funded as wider works and so spread across users through TNUoS charging arrangements.

Note 1: relative to a counterfactual offshore transmission build with no coordination
Note 2: Including onshore generators and demand

3.27. Charging arrangements will determine who funds AI in offshore transmission infrastructure once the assets are operational. Cost reflective charging for use of the offshore transmission network should in principle lead to different types of transmission users being exposed to a charge that is reflective of the incremental costs/benefits associated with the provision and maintenance of (potentially) shared transmission infrastructure assets associated with the AI at a particular location. This would help provide appropriate incentives on parties to evaluate and support coordinated offshore networks where it likely to lead to efficient outcomes.

3.28. We note that National Grid has recently published a paper specifically on charging for integrated onshore-offshore transmission assets and the principles that could be applied in these cases[19]. With this in mind we expect additional industry-led discussions and a further code modification process will be required to clarify the future charging arrangements and principles for coordinated offshore networks. We expect National Grid to develop charging arrangements to cover offshore coordination in a reasonable timeframe following our decision under the Significant Code Review work under Project TransmiT, envisaged in spring 2012.

Q 12: Do you agree with these high-level user commitment and charging principles for AI?

Q 13: What areas of the transmission charging regime may need to change to facilitate AI in the offshore transmission network?

Potential Ofgem assessment stages

3.29. Generators have suggested through the OTCP process that a key barrier to taking forward projects that involve AI is that they do not have sufficient certainty on how such investments might be treated under the offshore regime.

3.30. As discussed above, the issues of how AI opportunities might be identified and how the user commitment and TNUoS charging arrangements will operate for coordinated network configurations are areas that have created some uncertainty.

3.31. A further area that has been cited as a potential source of uncertainty is the mechanism by which generators recover the upfront costs of transmission investment when they transfer the asset to an OFTO. This occurs through

[19] Available at http://www.nationalgrid.com/NR/rdonlyres/28C89919-815F-4AD9-8ACF-4CC246EA18B6/51330/Finalintegratedchargingnote.pdf

Ofgem setting the transfer value of the asset, based on our assessment of what costs have been economically and efficiently incurred by the generator[20].

3.32. Stakeholder feedback through the OTCP has suggested that the generator undertaking initial works will need to have a clear idea of whether Ofgem is likely to consider it to be economic and efficient for them to take forward AI within the scope of their development works. This is particularly true where the generator would be undertaking AI on behalf of other generators.

Q 14: Is there a need for greater, earlier clarity on how including AI within the scope of works might be treated under our assessment of costs?

3.33. Given this potential barrier, we believe there may be a need for earlier Ofgem assessment stages, where we could provide our view of whether it would be economic and efficient to include AI within the scope of pre-construction and construction works. The aim of this would be to facilitate the offshore tender exercise by giving greater certainty in relation to the treatment of AI when undertaking our future assessment of costs.

3.34. We are therefore inviting views on a straw-man proposal for how such assessment stages might work within the offshore regulatory regime. Our analysis has suggested that the best way to achieve the design principles set out above is for the approach to AI to build on the existing connection principles outlined above. As shown in Figure 3, in this straw-man there would be five key stages in the identification and development of AI for coordinated opportunities.

[20] Under the enduring regime, generators following an OFTO build option will be able to recover economically and efficiently incurred pre-construction costs. The December 2011 consultation proposes that we will establish the costs associated with undertaking pre-construction works in order to inform bids at the invitation to tender (ITT) stage of a tender exercise, and that we will assess the economic and efficient costs associated with undertaking these works before licence grant in order to determine the transfer value of these assets. For the Generator build option, the December 2011 consultation set out that our cost assessment process will remain broadly the same as for transitional tender exercises. For both OFTO build and Generator build options, the December 2011 consultation set out that we will not provide generators with a cost guarantee for pre-construction or construction works.

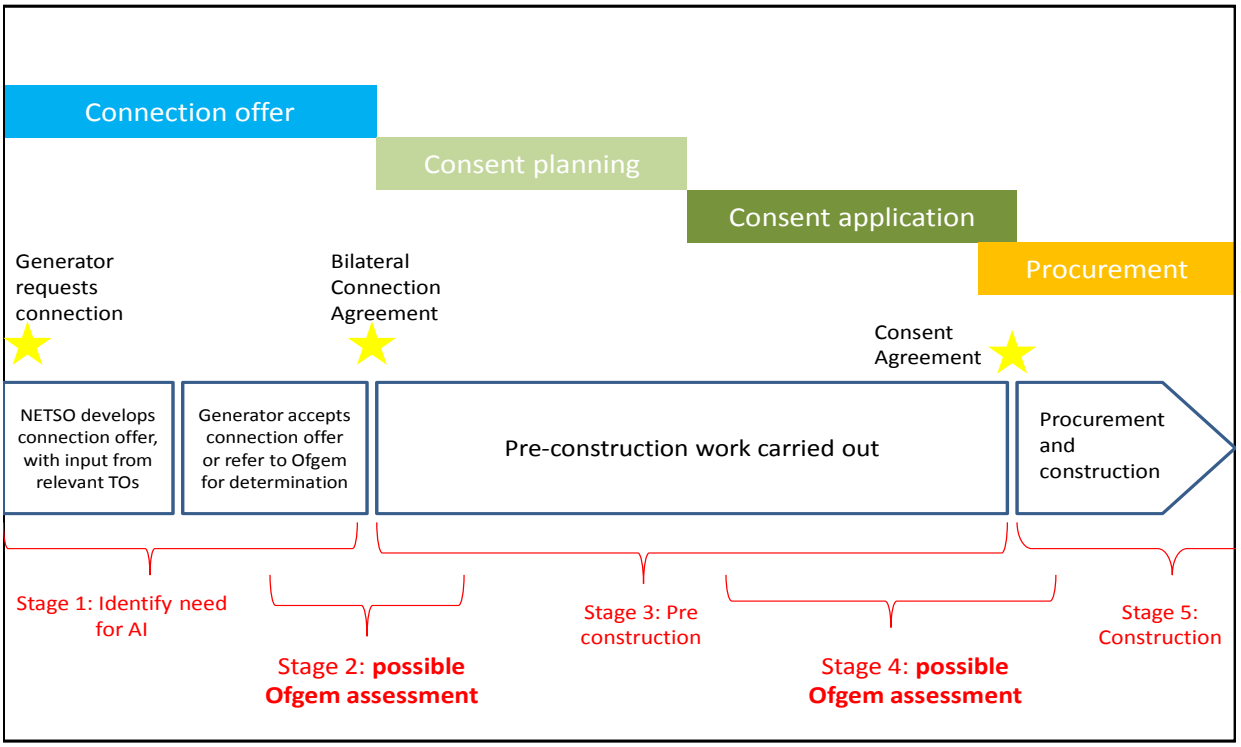


Figure 3: Potential straw-man for an approach to AI.

3.35. We suggest that there could be two Ofgem assessment stages, ahead of the pre-construction and construction stages. This would allow for generators to submit an economic case for including AI within the scope of either pre-construction and construction works respectively. Appendix 3 provides more detail on how this process could possibly work.

Q 15: What are your views on the potential form of these Ofgem assessment stages? Should it be optional for generators to go through the gateways where they would be undertaking the subsequent works?

Assessment criteria

3.36. In considering the economic case for AI in offshore transmission infrastructure we suggest we would adopt similar assessment criteria framework as for the TII framework onshore. These criteria would include the following, with further detail in the impact assessment at Appendix 2:

3.37. **Needs case** would cover the economic case for the investment, considering whether it would be economic and efficient in the context of the electricity transmission network as a whole, and the uncertainties that exist around the

AI needs case. This would include looking at the technical viability and need for the investment.

3.38. It would also consider the extent to which the investment would be in consumers' interests. As set out in Table 2 above, we do not believe that changes in this area should not result in significantly increased transfer of stranding risk to consumers where coordination is offshore generator focused, because consumers do not receive significant direct benefits from this type of coordination (except to the extent that these are aligned with generators' interests). It is not our intention to take away risks that sit naturally with generators in relation to the development of projects in an open market. We note in this respect that generators have already undertaken some AI within the transitional tender round projects at their own risk.

3.39. **Timing and scope**: we would seek comfort that the proposed AI project has been optimised from a scoping and timing perspective to give the best economic outcome.

3.40. **Technical readiness**: we would expect proposals that are submitted to be at a minimum level of technical readiness to proceed to the next development stage. This would aim to ensure that our assessment of the economic case was not made at too early a stage.

Q 16: Do you agree with the proposed high-level criteria for use by Ofgem if considering whether AI would be economic and efficient?

Timing of possible Ofgem assessment stages

3.41. In developing the transitional and enduring regulatory regimes, we have sought to develop a tender process that does not extend the timescale for delivery of offshore transmission assets.

3.42. We have just consulted on the timing of the tender process for OFTO build as part of the December 2011 consultation. We will be considering responses over the coming weeks in order to inform our proposals for OFTO build going forward. Those proposals could in turn inform our proposals for the timing of the possible Ofgem assessment stages. In the interim, we would welcome your views on the potential timing implications of the two proposed possible Ofgem assessment stages.

3.43. In considering the timing of the assessment stages, a key factor is likely to be when there will be sufficient evidence to provide a robust economic case, as otherwise we may be unable to agree that there is confidence that the AI would be economic and efficient.

3.44. We consider that the **first possible assessment stage** would ideally occur once the NETSO and generator(s) have undertaken significant options

analysis and have agreed on the most economic and efficient option to connect the generation to the NETS, and before significant pre-construction works have begun. This would imply this would happen just before or after the generator(s) and the NETSO sign a connection agreement, which we would expect to capture where necessary works include anticipatory investment.

3.45. If the assessment stage follows the connection agreement, then in cases where our view is sought and we do not agree that it would be economic and efficient to AI in the scope of pre-construction works then we expect this could result in the reopening of the connection agreement between the generator(s) and the NETSO.

3.46. We consider that the greater costs involved during the construction stage mean that we would need to have a greater degree of certainty that it would be economic and efficient to include AI in the scope of construction works. A submission at the second assessment stage would therefore need to factor in the latest connection agreement details and information on the need case for investment, including whether any key assumptions (such as generation background or costs) have changed.

3.47. There would be less uncertainty in the economic case for AI the later in the process that the second assessment stage was held. However, this needs to be set against project timelines. We consider that some key parameters in the timing of the second assessment stage might be:

- It would need to occur following consent applications being made as otherwise the uncertainty over what was the preferred option would be too great for us to base our assessment on. We would expect the generator or local TO to maintain appropriate flexibility in its consenting applications given the uncertainty as to the most appropriate final design.

- The assessment would not necessarily need to follow consents being achieved if there was a sufficiently robust economic case before then. However, Ofgem agreement that it would be economic and efficient to include AI within the scope of construction works would be conditional on all necessary consents being achieved at a later point.

- For OFTO build projects, the second assessment stage would need to be undertaken in time to inform the construction works to be undertaken by the OFTO.

3.48. We would welcome views on the best timing of the two assessment stages given the issues outlined.

3.49. In order to streamline the assessment stages, we propose that we would undertake significant early engagement with relevant parties. This would aim

to ensure that submissions to Ofgem are of sufficient quality to allow us to make timely decisions and begin preliminary analysis ahead of the assessment stages.

3.50. As part of this, we might provide guidance on how the process would work. This guidance might include details on:

- Where generators have the choice of putting proposals through the assessment stages
- The different steps in the process and different parties' responsibilities at each point
- What we would expect to see in submissions
- Our AI approval criteria, including information on what factors might lead to a change in decision between assessment stages.

3.51. We also believe there may be benefits from more formal requirements on the NETSO and/or generators to provide information to Ofgem to allow us to begin preparatory work. For example, this might include requirements for the NETSO to provide us with information on connection offers that include AI when those connection offers are made.

Q 17: What are your views on the appropriate timing of the possible Ofgem assessment stages?

Q 18: What information should in your view be provided as part of any published guidance that supports AI approval?

Q 19: Should there be additional requirements to share information with Ofgem to help streamline Ofgem's assessment of AI for project? What information should be included?

Who undertakes AI?

3.52. We propose that pre-construction of **offshore generator-focused** AI would largely follow the framework set out in our December 2011 consultation. This means that generators would undertake pre-construction works before then following one of the Generator build or OFTO build options.

3.53. For pre-construction and construction works for **assets where the AI would be driven by wider network benefits**, a key consideration is which parties are best placed to undertake the work economically and efficiently, to high standards and in a timely manner.

3.54. These assets would not be solely for the purpose of exporting offshore generators' power and it is likely that they will be paid for by and provide benefits to other users as well as the offshore generator. This means that there is a risk that the offshore generator may not have the same incentives to ensure such an asset is built in a timely, cost-effective and quality manner as compared to where they are building their local transmission connections (which they are highly reliant on for the export of their power and face a high proportion of the costs). They may also be unwilling or have insufficient resource to take on the liability and responsibilities for developing such assets.

3.55. This suggests there is a need to consider alternative approaches for who should undertake pre-construction and construction of offshore assets where the AI is significantly driven by wider network benefits.

3.56. For pre-construction works, we have considered four main options:

- Option 1: Maintain the existing approach, whereby offshore generators would be responsible for pre-construction.
- Option 2: Fund existing onshore TO or OFTO (or TOs if, for example, the asset crosses different TO's geographical boundaries) in the area to undertake the pre-construction works.
- Option 3: Continue to give generators the choice of undertaking pre-construction, but with the local TO taking on the activity should the generator prefer not to take on the responsibility.
- Option 4: Ofgem would tender for the pre-construction works.

3.57. Based on the analysis set out in the impact assessment, we currently consider that options 2 or 3 are most in line with the design principles we set out above and most likely to provide the best value for the consumer given the risks associated with a lack of incentives for the generator. However, we would welcome views.

3.58. In the December 2011 consultation, we proposed not prioritising the early OFTO build option for development. We would also be interested in whether views on whether the feasibility and attractiveness of the early OFTO build option might be different when considering assets that would be driven by wider network benefits.

3.59. The same potential reduced incentives for generators apply to the construction of assets that are driven by wider network benefits. As a result, the construction of these types of asset may fall more naturally under the OFTO build rather than Generator build option. Under the Generator build option, we believe there may be a need to consider enhanced incentives on

generators to ensure that they construct such assets cost-effectively, to a high quality and in a timely manner.

3.60. The impact assessment at Appendix 2 considers the incentives on different parties, and the costs, benefits and impacts associated with these options in more detail.

Q 20: What are your views of the different options for who should undertake pre-construction works for assets that are driven by wider network benefits?

Q 21: Could OFTOs potentially have a role in undertaking pre-construction works for assets significantly driven by wider network benefits? How might this work?

Q 22: Do your views of the attractiveness and feasibility of an early OFTO build option differ for assets that are driven by wider network benefits?

Q 23: Are there changes that can be made to enhance the incentives on offshore generators in undertaking pre-construction and construction works for assets that are driven by wider network benefits?

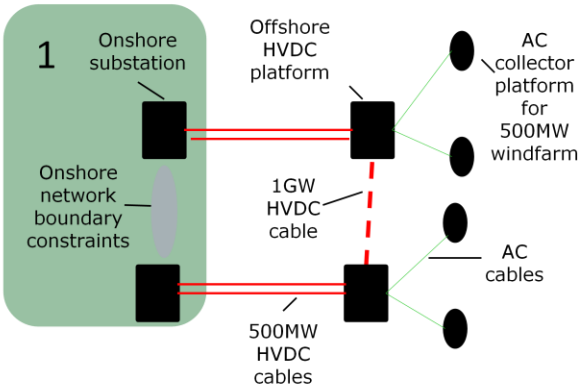
Q 24: What would be the impact on the attractiveness of the Generator build option for assets that have wider network benefits if additional delivery incentives are incorporated? Should the OFTO build option be the main focus for this type of asset?

3.61. If a different approach were adopted for different types of AI then there would need to be a mechanism for making the distinction between the different types. This distinction could be made as part of the connection offer process. This would ensure that offshore generators have sufficient clarity on the consequences of a particular connection offer.

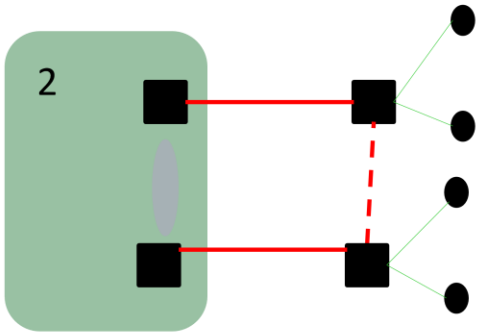
3.62. We recognise that making this distinction may not be clear-cut. Assets that incorporate AI could sit along a spectrum where they serve the purpose of providing offshore generation connection (or increased security through circuit redundancy) as well as providing wider network benefits.

3.63. Figure 4 considers scenarios to illustrate some of the issues here. In particular, it sets out a range of possible cases where the extent to which assets might be driven offshore generators' needs or wider network benefits varies.

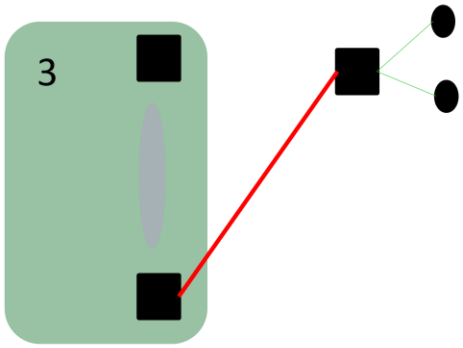
Figure 4: discussion of which assets might be considered to be investment that is significantly driven by wider network benefits



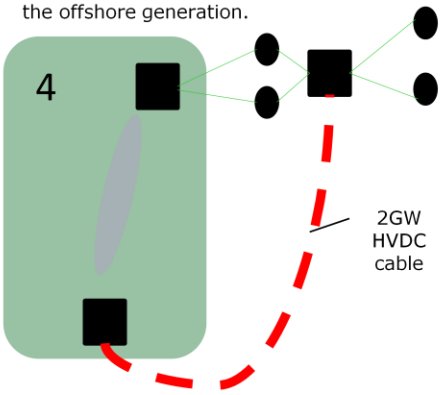
1. In this case, generators are unlikely to be seeking a link between the two offshore platforms as there is circuit redundancy for the generation connected at each offshore platform. Therefore the dashed 1GW link is likely to be driven mainly by the wider network benefits it would provide. The HVDC cables from the offshore platforms to shore would be providing a potential channel for onshore power flows but they would also be providing the primary export routes for the offshore generation.



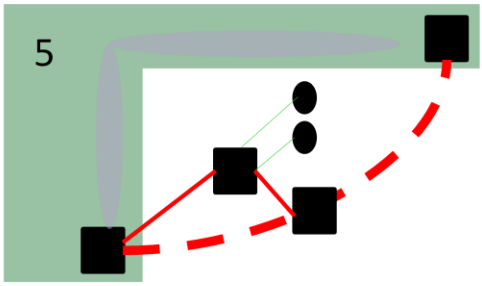
2. In this example it is less clear whether the dashed 1GW HVDC cable would be driven by generator security requirements or for wider network benefit.



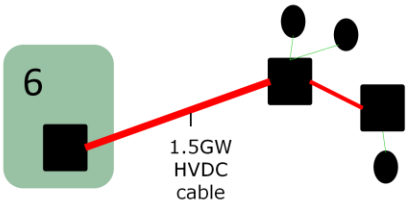
3. In this example the offshore generation has to connect to a more distant onshore substation due to onshore network constraints. The 1GW HVDC link is their sole route to shore and is not also a potential channel for other onshore power flows. We therefore envisage this would not be classified as for wider network benefit.



4. In this case, there is a need for onshore reinforcement which is provided by the long dashed 2GW HVDC cable around the coast. This provides an additional channel for power flows between the north and south onshore substations . We would envisage this sort of asset would be considered as being significantly driven by the wider network benefits.



5. In this example the dashed 2GW HVDC cable is providing significant onshore reinforcement and we would envisage this sort of asset would be considered as being significantly driven by wider network benefit. The offshore generation is connecting to this link for additional security but has another route to shore.



6. In this case, there is no onshore reinforcement provided but the initial 1.5GW HVDC connection would benefit a number of different users. We would welcome views on whether such an asset could need to be treated as for wider network benefit.

3.64. We note that there are already distinctions made in connection offers between enabling and wider works (following the implementation of DECC's enduring access reforms[21]). We also note that TNUoS charging or user commitment arrangements make distinctions between local and wider[22] use assets when determining charging treatment or securitisation requirements. There are also other options to base the distinction on, such as:

- The value to the consumer of AI
- The proportion of the asset which is delivering requested capacity for a generator(s) (as opposed to being driven by wider system needs); and/or
- The extent to which the offshore generator is reliant on an asset for its export route to the NETS.

Q 25: What are your views on how any distinction between "offshore generator focused" and "wider network benefit" assets should be made?

3.65. We would be interested in views on whether there may be barriers to generators undertaking pre-construction and construction works that would benefit other generators as well as itself. The remainder of this section focuses particularly on the transfer of assets secured in pre-construction between generators and access rights for generators to a shared asset.

Treatment of shared assets secured in pre-construction AI

3.66. Where pre-construction AI has been undertaken by an offshore generator in an area this may have involved securing additional land, consents or survey data that will later be required by offshore generators to construct the transmission assets to connect their projects.

3.67. We consider that commercial arrangements between generators could be a potential mechanism for the generator to recover the costs associated with undertaking such pre-construction works. These arrangements would also govern the transfer of the relevant assets to the other party. In our assessment of costs for the generator who undertook the works, we suggest that we would then consider the economic and efficient costs net any costs recovered from other generators.

[21] From 11 August 2010, the NETSO has been able to offer terms for connection to the electricity transmission network based on a "connect and manage" approach. This enables new generation to connect to the network ahead of wider transmission system reinforcement, once all "enabling works" are complete.

[22] Under the current interim user commitment arrangements that are expected be in place until April 2012, NGET do not require users to secure wider works.

3.68. However, we recognise that the generator who undertakes the works may need additional assurance that they will be able to recover the costs they incur on others' behalf. We consider that user commitment arrangements could have an important role in cost recovery here.

3.69. We would also welcome views on whether an OFTO may need to have a role in holding assets (e.g. consents) for future generators in an area should those future generators not come forward before the first generator transfers its assets to the OFTO. In such a scenario, the first generator would recover the efficient costs it had incurred through the transfer of assets to the OFTO.

Q 26: What role could commercial contractual arrangements have in ensuring that pre-construction assets are passed to the relevant party and the first developer can recover their costs?

Q 27: What changes may be needed to support the process? What would be the impact of requiring an OFTO to hold assets for future generators?

Access rights for shared infrastructure assets

3.70. Where AI involves the construction of a shared infrastructure asset for a number of generators, then later generators connecting their wind farms to the shared asset would need sufficient access rights. This is an issue at the design, construction and operational stages of the shared asset.

3.71. Once these assets have transferred to the OFTO then we consider that the existing obligations on OFTOs to provide access will apply. However it is possible that access might be needed when the asset is still owned by a generator under a generator build option. We would be interested in views on whether contractual arrangements and current industry licences and codes are sufficient to provide for this access, and if not what changes may need to be made.

Q 28: Will commercial arrangements and industry codes and licences provide sufficient access rights for shared assets? If not what changes may be needed to support the process?

Q 29: Are there any other issues with shared assets that need to be considered?

Summary of the straw-man approach to AI

3.72. Based on the potential measures discussed above, Table 3 summarises the potential stages and roles of different parties. Further details on the different potential stages in this straw-man are set out in Appendix 3.

Table 3: Summary of potential AI stages and responsibilities

	Offshore generation-focused AI	AI driven by wider network benefits
1. Identifying the need for and type of AI	Existing connection application, assessment and offer process identifies AI. The NETSO, generators and local TOs contribute to the identification of the most economic and efficient means to connect new generation to the network, including where this requires AI. The NETSO's offer may also need to determine whether the AI is related to offshore generator-focused investment or whether the investment is being driven by wider network benefits. We are inviting views on whether AI might need to be identified other than through the connection offer process, and whether any changes are needed to the NETSO's role to facilitate our proposed model.	
2. Possible Ofgem assessment	Lead generator may submit to Ofgem the economic case for including AI in the scope of pre-construction works. All business cases would need to be supported by the NETSO, local TO(s) and other affected generators as appropriate. If we agreed it would be economic and efficient to include the AI in the scope of pre-construction works, this would provide greater certainty in relation to the treatment of AI when we later undertook our assessment of costs.	Where generators would be undertaking the pre-construction, this would operate in the same way as for generator-focused assets. If a TO would be undertaking the pre-construction works then the economic case would need to be submitted to Ofgem for approval. Ofgem approval would trigger funding for the TO.
3. Pre-construction activities	Lead generator undertakes pre-construction activity.	Depending on the option taken forward, either a generator or a TO might undertake pre-construction activity, with appropriate incentives in place.
4. Possible Ofgem assessment	Under the Generator build option, the generator could submit to Ofgem an economic case for including AI in the scope of construction works. If we agreed it would be economic and efficient to include AI in the scope of construction works, this would provide greater certainty in relation to the treatment of AI when we later undertook our assessment of costs. Under the OFTO build option, the generator would need to submit an economic case to support the inclusion of any AI in the scope of the construction works to be undertaken by the OFTO.	For an OFTO build tender exercise, the party undertaking pre- construction would need to submit an economic case to support the inclusion of AI in the scope of construction works to be undertaken by the OFTO. If the Generator build option were available then if the generator were to pursue this option then this would operate in the same way as for generator-focused assets.
5. Construction	Delivered through either the OFTO build or Generator build option.	Focus for construction of such assets might be the OFTO build option. Additional delivery incentives may be needed for the Generator build option.

4. Next steps – implementation and further development

Chapter Summary

This chapter sets out potential next steps and further refinements we may need to undertake following responses to this consultation and in order to implement the changes required to support coordinated development of the offshore transmission regime.

4.1. We welcome views on the issues set out in this document and will be actively engaging with stakeholders throughout the consultation period to ensure interested parties have the opportunity to provide input. In particular, we are seeking views on the NETSO's role in system planning, including in the potential reforms it is considering to ODIS, and the potential approach to AI in offshore transmission infrastructure.

4.2. In light of respondents' views on the potential measures set out here, we will seek to publish conclusions after the consultation period closes. We will also be undertaking a detailed review of the legal framework and implementation routes for any proposals following consultation. This will include considering whether it is necessary to implement changes through the current industry codes and standards, tender regulations, licences and other supporting tender documentation. In light of this, we will also consider whether further consultation on detailed aspects is required.

4.3. The proposals outlined in this document therefore do not represent Ofgem's final decision on what changes will be made to the offshore transmission regulatory regime.

Planning an efficient and coordinated network

4.4. We have highlighted where we would like to see changes to improve the ODIS and other planning documents to provide better information to current and potential generators. NGET have recognised that there are some improvements that can be made and intend to consult on their proposals to reform ODIS and SYS in the near future. We will consider responses to this consultation and NGET's exercise in determining whether changes are warranted to NGET's ODIS and SYS licence obligations.

4.5. We will be undertaking further work during 2012 to consider the role of the NETSO as system planner across onshore, offshore and interconnector regulatory regimes.

4.6. DECC and Ofgem will also be considering potential conflicts of interest for NGET arising from its proposed role in implementing the Electricity Market Reform (EMR) proposals.

AI process development and implementation

4.7. Whilst coordinated offers are already being made we are mindful of the need to implement a robust AI approach to provide clarity for generators, without adding delay to the tender process under Generator build or OFTO build. Therefore the detail around a potential approach to AI will be further developed throughout 2012.

4.8. The user commitment and charging mechanisms will be integral to the AI approach, as highlighted in Chapter 2. We expect NGET to lead industry discussions on updating the charging methodology to incorporate coordinated solutions following the conclusions of Ofgem's Project TransmiT, expected in March, and will monitor these discussions closely. We will also consider whether further changes are needed to user commitment rules to support AI once we have made our decision on CMP 192, which is expected shortly after the current consultation on Ofgem's draft impact assessment closes in mid-March.

Tender process development and implementation under the enduring regime

4.9. We have recently consulted on tender exercises under the enduring offshore electricity transmission regime. The potential measures in this document would sit alongside and form part of the proposed enduring tender regime, but are not intended to prejudge the outcome of that consultation exercise. We will consider the outcome of both this and the enduring tender consultation in formulating our final proposals for measures to support coordination within the wider offshore transmission regulatory regime.

Appendices

Index

Appendix 1 - Consultation response and questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.3. Responses should be received by 26 April 2012 and should be sent to:

Jon Parker
Offshore Coordination
9 Millbank,
London SW1P 3GE
offshore.coordination@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. Any questions on this document should, in the first instance, be directed to:

Jon Parker
Offshore Coordination
9 Millbank, London SW1P 3GE
020 7901 7408
offshore.coordination@ofgem.gov.uk

Questions contained within this consultation:

CHAPTER: Two

Question 1: What are your views on whether:

a) the connection process (including the relevant industry framework) supports the design of an efficient and coordinated network?
b) the NETSO needs further powers to develop an efficient network?
c) there are any barriers to the NETSO taking on an enhanced role in network development?

Question 2: Do you agree with the proposed objectives for a reformed network planning document? Would other changes be useful?

CHAPTER: Three

Question 3: Do you agree with our initial proposal for a definition of AI and that the types of AI set out are those that need to be captured in an approach to AI?

Question 4: Do you agree with our initial proposed objectives and regulatory design principles for an approach to AI? Are there some which you see as more important than others?

Question 5: What are your views on use of the connection application process as the platform for identifying AI opportunities? Could there be a need for AI to be identified outside of the formal connection offer process?

Question 6: Do you envisage that changes to industry codes and licences are necessary to enable the connection offer process to identify AI?

Question 7: Are there barriers to cooperation in connection offers being agreed where a development involves more than one generator? What actions do you consider are warranted to address these?

Question 8: Are there other parties that should be able to identify opportunities for AI?

Question 9: What changes may be needed to ensure that assets that provide wider network benefits are designed, constructed and operated to provide a longer asset lifetime?

Question 10: What are your views on whether a longer revenue stream for assets that have wider network benefits could create better value for consumers?

Question 11: What are your views on the best way to deal with possible interaction between assets with differing lengths of tender revenue streams?

Question 12: Do you agree with these high-level user commitment and charging principles for AI?

Question 13: What areas of the transmission charging regime may need to change to facilitate AI in the offshore transmission network?

Question 14: Is there a need for greater, earlier clarity on how including AI within the scope of works might be treated under our assessment of costs?

Question 15: What are your views on the potential form of these Ofgem assessment stages? Should it be optional for generators to go through the gateways where they would be undertaking the subsequent works?

Question 16: Do you agree with the proposed high-level criteria for use by Ofgem if considering whether AI would be economic and efficient?

Question 17: What are your views on the appropriate timing of the possible Ofgem assessment stages?

Question 18: What information should in your view be provided as part of any published guidance that supports AI approval?

Question 19: Should there be additional requirements to share information with Ofgem to help streamline Ofgem's assessment of AI for project? What information should be included?

Question 20: What are your views of the different options for who should undertake pre-construction works for assets that are driven by wider network benefits?

Question 21: Could OFTOs potentially have a role in undertaking pre-construction works for assets significantly driven by wider network benefits? How might this work?

Question 22: Do your views of the attractiveness and feasibility of an early OFTO build option differ for assets that are driven by wider network benefits?

Question 23: Are there changes that can be made to improve the incentives on offshore generators in undertaking pre-construction and construction works for assets that are driven by wider network benefits?

Question 24: What would be the impact on the attractiveness of Generator build option for assets that have wider network benefits if additional delivery incentives are incorporated? Should the OFTO build option be the main focus for this type of asset?

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Question 27: What changes may be needed to support the process? What would be the impact of requiring an OFTO to hold assets for future generators?

Question 28: Will commercial arrangements and industry codes and licences provide sufficient access rights for shared assets? If not what changes may be needed to support the process?

Question 29: Are there any other issues with shared assets that need to be considered?

Appendix 2 – Initial impact assessment for an approach to AI

Summary

1.1. Chapter 3 sets out our initial proposals for an approach to AI which aims to facilitate the efficient coordination of offshore network developments within the existing offshore regime. This appendix sets out:

- A comparative analysis of the key options we have considered during the development of our initial proposals
- The costs, benefits and impacts associated with the introduction of an approach to AI and more specifically of the options listed below.

1.2. We invite views on the issues discussed below. Where costs, benefits and impacts are identified, respondents are encouraged to indicate the magnitude of these. We acknowledge that there is a significant qualitative element to this assessment, and that it may not be possible to fully quantify many of the secondary impacts and costs of these initial proposals.

Objectives

1.3. As detailed in Chapter 3, a key issue identified by the OTCP is the importance of AI in keeping open the options for coordinated network development in the future. This will apply for both coordination between the connection of different offshore generation projects and coordination to help reinforce the wider network. However, the OTCP also found that uncertainty over the approach to and funding of AI is the main issue to be resolved to facilitate coordinated transmission network development. Our initial proposals for an approach to AI aim to address this issue by providing certainty as to how AI will be treated under the offshore regulatory regime.

1.4. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ("the Authority"), the regulator of the gas and electricity industries in Great Britain. Our proposal to introduce an approach to AI which enables efficient coordination support the principle statutory duty of the Authority, protecting the interests of present and future gas and electricity consumers[23], by:

[23] In this context, the interests of gas and electricity consumers are their interests taken as a whole, including their interests in the reduction of greenhouse gases and in the security of

- Promoting effective competition within electricity transmission by supporting and enhancing the current competitive offshore transmission regime
- Contributing to the development of a sustainable energy sector by lowering the long-term cost of offshore wind energy
- Increasing the security of the onshore and offshore transmission network by: providing multiple export routes for offshore electricity generation; building redundancy into the offshore network; and providing new opportunities for more economic and timely reinforcement of the onshore network.

Options

1.5. In this impact analysis we focus on two primary options.

Option 1: a 'do nothing' option, in which no changes are made to the existing regulatory regime. This does not mean that no AI would be taken forward, but there would not be a clear approach to provide certainty on how AI would be treated under the regulatory regime. This option acts as a benchmark against which to assess the wider costs, benefits and impacts of our initial proposals for an approach to AI.

Option 2: Providing greater clarity on how AI would be treated under the offshore regulatory regime. We acknowledge that there are many 'sub-options' relating to the development of an approach to AI. For the purposes of this impact assessment it is useful to set out these sub-options explicitly under five headings:

1. Identifying the need for, and type of, AI
2. Who undertakes pre-construction works for the AI
3. Who undertakes construction works for the AI
4. Potential Ofgem assessment points
5. Ofgem assessment criteria

1.6. In this section we will set out the contributions that we expect each option, and sub-option, will make to our policy objective. When assessing sub-

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supply of gas and electricity to them.

options, we will also consider their contribution to our high-level design principles for AI.

1.7. We welcome views on all of the options contained within this impact assessment and also welcome further suggestions which might better meet our policy objectives.

Option 1 – do nothing

- Under a do nothing option, it would still be possible for AI to be taken forward under the offshore regime. Under the transitional regime, some investment has already been made by generators on an anticipatory basis. In addition, the NETSO has already made connection offers to offshore generators that include coordinated (or integrate-able) elements.

1.8. However, the OTCP found that generators are reluctant in some cases to take forward projects that involve AI as they do not have confidence that they will be able to recover their investment. The AI that has occurred to date has been where the AI is likely to provide benefits for later phases of the generator's own project. In the absence of change, generators are likely to be particularly reluctant to take forward AI where it would provide benefits for other offshore generators or provide wider network benefits through mitigating the need for onshore reinforcement.

1.9. In this context, while the NETSO has been providing connection offers that include coordination it cannot mandate that offshore generators accept them. We understand that offshore generators have been reluctant to sign such connection offers given the perceived uncertainty in how AI will be treated within the offshore regime. This uncertainty relates to:

- How Ofgem will consider AI through the tender exercise, including particularly in our assessment of costs. This sets the value that a generator receives for the transmission asset it has developed when it is transferred to an OFTO

- Who will identify and undertake the development works for assets that incorporate AI which have wider network benefits

- What will be the commitment and charging impacts for the generator, given that the current rules do not provide clarity on the treatment for coordinate offshore investments

1.10. The first two bullets are covered in the approach to AI considered under Option 2. The OTCP highlights that addressing this uncertainty will assist in realising the benefits that may come from coordination, in instances when it is the most economic and efficient option. User commitment and charging

arrangements are currently under review, and may need further industry-led changes to provide clarity on the treatment for coordinated offshore networks.

Option 2 – Providing greater clarity on the approach to AI

1.11. This option involves the introduction of an approach that gives clarity on the treatment of AI within the offshore regulatory regime. While there are a number of sub-options for how an approach to AI might be designed, the main benefit of this approach (compared to Option 1) is that introducing an approach to AI would address the uncertainty relating to Ofgem's consideration of AI through the tender exercise and who would undertake AI development works. As set out in Chapter 3 this has the potential to deliver a number of direct and indirect benefits for generators and consumers through lower overall transmission costs and more timely and efficient connection of an OWG where AI is delivered appropriately.

1.12. Below we discuss the key sub-options that we have considered in developing our initial proposals for an approach to AI. The costs, benefits and risks of the approach as a whole are considered in further detail in this Appendix.

Identifying the need for and type of AI

1.13. When considering the different options for how opportunities for AI are identified we have looked to understand how a new or existing mechanism/ vehicle could permit the relevant stakeholders to identify the need for and type of AI. Options considered include:

- Generator-led: offshore generators would have the key role in identifying where there are opportunities for AI to lead to efficient coordination

  Offshore generators are in a strong position to identify opportunities for coordination within their own projects. They could also identify possible opportunities for coordination with other projects in the area through discussions with other generators. However, they would not have the same oversight of all projects in an area in the way that the NETSO does. They would also not be well placed to assess where there are constraints on the onshore network that could be effectively mitigated through coordination in offshore connections. It was for this reason that the role of NGET as SO was extended offshore, so that it can provide a central views of how connections could be usefully coordinated to ensure the economic and efficient development of the network as whole.

- Building on the existing connection offer process: where generators, the NETSO and TOs have a role.

  Under this option, generators trigger the process by requesting a connection offer from the NETSO. The NETSO then has three months to

provide a connection offer to the generator. During this time, the NETSO will request the relevant local TO(s) to provide an offer for what works it would need to undertake to provide the most economic and efficient connection for the generation to the NETS.

This option provides the benefits of the NETSO and local TO being able to take a holistic view across network needs when considering the best connection offer to provide the generator. In considering the options, they would have a role in identifying whether a coordinated approach could provide a better means of connecting different offshore generation phases or to mitigate the need for separate onshore reinforcement. This would include identifying where AI is necessary to achieve such configurations.

This option also provides generators with some flexibility. For example, in submitting their connection requests, generators can choose how much of their project to request connection for (whether in one phased connection request or in separate requests for different phases). The NETSO also engages with generators through the connection offer process to ensure a detailed consideration of options is undertaken. The generators also provide a key trigger in determining whether the works go ahead through their decision on whether to sign a connection offer.

This would operate largely as the current connection offer process operates (reflected in the fact that the NETSO has already been making integrate-able offers). However, we are welcoming views on whether changes to the current arrangements are needed to better facilitate the identification of AI needs. For example, this includes considering whether the NETSO may need to be able to have a greater role in specifying some aspects of the high-level functionality of offshore assets (such as capacity levels or additional circuit breaker bays on offshore platforms).

- Blueprint and build approach: this option would involve the central direction of the offshore network build-out whereby a central design authority (such as the NETSO) would set out a blueprint for what assets need to be built offshore to develop a coordinated network.

  In theory, an advantage of a blueprint and build approach (relative to more market led approaches) could be that the central design authority would be able to take a holistic view of the best overall network design and could mandate that this is built. This would overcome issues with the need to coordinate different parties' interests.

  However, evidence collected through the OTCP suggests that in practice this option would be likely to have very substantial downsides given that there is significant uncertainty as to how much and when offshore generation will be built. In particular, building to a blueprint would significantly reduce flexibility and risk not being able to respond to changing network needs, such as additional or reduced generation

needing connection in an area. This could lead to significant unnecessary costs if transmission assets were built and then underutilised, or could introduce significant time delays for the connection of offshore generation that was not anticipated when the blueprint was drawn up.

As discussed in Chapter 2, the NETSO currently produces the ODIS on an annual basis. However, ODIS is a high level, forward looking statement which considers particular future scenarios of generation growth, and potential investment needs under those scenarios. It is not a blueprint or future 'plan' of what the offshore transmission network will look like.

Analysis and stakeholder feedback through the OTCP suggested there could potentially be improvements to the system planning process, to help ensure development of the most efficient network possible. However, feedback suggests but there was a widespread view that a blueprint and build model would not be effective.

1.14. Given the positive and negative impacts associated with these different options, our preferred option for identifying AI is through building on the connection offer process and the role of the NETSO, TOs and generators within this. We would welcome views on this conclusion, and whether improvements are needed to make sure this option is effective.

Who undertakes pre-construction works for the AI

1.15. The options set out below take into account the incentives of relevant stakeholders and how these may differ between the two types of AI. It should be noted that these options aim to outline which party is assigned the formal responsibility for undertaking the pre-construction works. Under any option, we consider that it could be possible for generators and TOs to enter into commercial partnerships to undertake the work.

- 'Do nothing': whereby offshore generators would be responsible for pre-construction.

  This would be the standard approach that has been followed under the transitional regime and proposed under the enduring regime. For offshore generator-driven AI, this framework continues to provide significant benefits, in that the generators have strong incentives for works to be completed economically and efficiently, to high standards and in a timely manner. It also has the benefits of providing generators with the flexibility to undertake the pre-construction works for transmission and generation assets together.

  However, for pre-construction works for assets where the AI would be significantly driven by wider network benefits, assets would not be solely for the purpose of exporting offshore generators' power and would be

paid for by and provide benefits to other users as well as the offshore generator. This means that there is a risk that the offshore generator may not have the same incentives to ensure such an asset is built in a timely, cost-effective and quality manner as compared to where they are building their local transmission connections (which they are highly reliant on for the export of their power and face a high a proportion of the costs). They may also be unwilling or have insufficient resource to take on the liability and responsibilities for developing such assets.

- Having the local TO undertake the pre-construction work for offshore transmission assets that are significantly driven by wider network benefits: this could have advantages as these assets are likely to be a substitute for onshore reinforcement, so if onshore TOs are undertaking the work they are likely to be well placed to understand and build the case for optimal network developments. This option would also be consistent with the proposed approach for onshore competition, as set out in our consultation *RIIO-T1 Implementing competition in onshore electricity transmission*, December 2011. It would also provide an independent body to undertake the works, which may be a benefit where there are a number of generators reliant on the asset being developed.

  The downsides of this option would include a reduction in generator flexibility as they would not be unable to undertake the works, yet their project would still be in some way reliant on the development of the asset. There could also be concerns that TOs would not be adequately incentivised to carry out this work, though funding would be conditional on certain outputs and we note TOs' obligation to develop an economic and efficient network is relevant in this regard.

  In addition, there would be a need to ensure that the TO undertaking the work was required to ensure that pre-construction works are carried out in a way that facilitates a level playing field in the OFTO tender exercise and an easy transfer process. We consider this would require licence obligations on the TO to provide full information (including any commercial or technical studies undertaken as part of the project) to all bidders through the data room as part of the tender exercise, as well as making land acquisitions and all consents and permissions associated with the works undertaken transfer being ready. These would be broadly equivalent to the obligations that offshore generators will face under OFTO build.

- Continue to give generators the choice of undertaking pre-construction, but with the local TO taking on the activity should the generator prefer not to take on the responsibility: this would allow generators flexibility and could allow them to undertake the activity where they saw strong synergies with the development activity for other links for their project, while providing for a back-up provider should they be unwilling to take it on. However, it still has the risk that generators could take on the role but then not perform it well given a lack of strong incentives.

- Ofgem run a tender exercise for pre-construction works: running a tender would entail costs for both Ofgem and bidders but there may be potential cost benefits due to the introduction of competition. At this stage, we expect the value of pre-construction works to be relatively small when compared to the costs associated with constructing transmission assets. However, tenders could have a role for projects that involve more significant pre-construction costs or where several TOs are in a position to undertake the works.

1.16. We would welcome views on these different options, and are consulting on whether there are any changes that can be made to improve the incentives on offshore generators in undertaking such pre-construction work.

Who undertakes construction of the AI

1.17. These options for who undertakes construction take into account the incentives of different parties, within the context of our recent consultation proposals for the enduring round of offshore transmission tenders. Options considered include:

- **Generators continue to have the choice of Generator build and OFTO build** options for all offshore assets, including those that are significantly driven by wider network benefits.

  Again, for offshore generator-driven AI the benefits of providing the flexibility of Generator build and OFTO build options continue to be strong, with generators having strong incentives to ensure that these assets are constructed cost effectively, to a high standard and in a timely manner.

  However, for assets that are for wider network reinforcement, we consider that the issues noted with regards to generator's incentives to undertake pre-construction also apply here. For example, when these assets are not the offshore generators sole export route, it may not have sufficient incentives to construct the works cost effectively, to a high standard and in a timely manner. This carries even greater risks for consumers given the substantially higher costs involved in construction works. There are also significant potential impacts for other users reliant on the asset being developed.

- **Assets that are significantly driven by wider network benefits would exclusively developed through the OFTO build option**.

  This option would ensure that strong incentives are on parties to complete these works to a high standard and in a timely manner as the export capacity of the assets are directly linked to the OFTOs revenue stream. However, it would reduce the flexibility for generators to

undertake the works. This could be important if they perceived that controlling the development works was an important aspect of managing their overall project risk. However, at the same time the generators may be reluctant to take on the development of such significant transmission assets give the complexity and upfront costs involved.

1.18. Given this analysis, we are seeking views on whether there is a need to enhance incentives on generators to ensure they construct such assets cost effectively, to a high quality and in a timely manner, or whether OFTO build should be the main focus for these assets.

Potential Ofgem assessment points

1.19. To date AI in relation to onshore transmission has been dealt with under the established Transmission Investment Incentive (TII) framework. In TII, Ofgem considers funding requests through a "staged approach", where projects receive incremental tranches of funding over time. Further details of this framework are given in Appendix 4.

1.20. Below we consider a number of options for how Ofgem might provide an upfront view of whether it agrees the business case for AI being included in pre-construction and construction works.

- No change to the existing framework, where Ofgem undertakes an assessment of costs at the point at which the assets are to be transferred from a generator to an OFTO. In this assessment, we determine the economically and efficiently incurred costs by the generator in developing the assets. This is used to set the transfer value of the assets, and so is the key way by which the generator recovers its upfront costs.

  This option would not provide generators with advance certainty of whether Ofgem agreed that including AI within the scope of pre-construction or construction works would constitute economically incurred costs. As noted under Option 1 ('do nothing'), this would not necessarily prevent AI (there are already examples of AI being undertaken by generator for their own benefit), but it would mean that there would be regulatory uncertainty for generators. The OTCP found that offshore generators may be reluctant, in some cases, to take forward projects that involve AI as they do not have confidence that they will be able to recover their investment, particularly where it is not for their own potential benefit.

- Ofgem assess AI proposals through annual assessment to consider the economic case for undertaking AI in the year ahead. This is similar to Ofgem's "staged approach" to considering onshore AI funding requests under the TII framework in which individual TOs received annual tranches of incremental funding.

This would provide additional upfront certainty for generators on whether Ofgem agreed the economic case for undertaking AI and so would help generators bring forward assets that include AI into the OFTO tender process. It would also ensure that Ofgem's assessment could take into account the latest information on the economic case for the AI at the frequent assessment stages, which could allow for continued assessment of whether the AI remains in the interest of consumers. However, this could be a burdensome approach for industry and Ofgem and could add time delays to projects.

- Ofgem assess AI proposals at two points. This would provide Ofgem's view on the economic case for AI being included in the scope of pre-construction and construction works at the first and second assessment stages respectively. This would allow an updated assessment of the economic case to be assessed ahead of significant funds being committed during the pre-construction and construction stages, providing consumer protection, while being less burdensome than annual assessment stages.

- Ofgem assess AI proposals through a single assessment. This would provide Ofgem's view on the economic case for AI being included in the scope of works either ahead of pre-construction or construction works.

  If the former, this would mean that Ofgem's would need to make an assessment where there could still be significant uncertainty about whether the economic case was sufficiently robust to commit to significant extra costs during construction. This could mean that Ofgem may not be able to agree the economic case. Alternatively, agreement could be conditional on a number of factors that would mean that the assessment was less effective at resolving regulatory uncertainty for the generator.

  If the assessment occurred after the pre-construction stage, there is a risk that Ofgem may consider that including AI in the pre-construction works was not justified, which could mean that we do not deem these to be economic and efficient when we undertake our assessment of costs. In such a scenario, there is an additional risk that certain pre-construction works were undertaken unnecessarily (and therefore that the costs associated with these works would not be recovered) or that some additional pre-construction works may need to be undertaken if a different connection option is subsequently taken forward. This risk is reduced if Ofgem also assesses the AI proposals ahead of significant pre-construction commencing.

1.21. Given the possible impact of the options listed above, we are proposing that there might be two potential points for Ofgem assessment of the AI economic case, though we welcome views on this.

1.22. There are also further options around the potential assessment points:

- Whether they would be optional or not. Providing generators with the option would allow them to submit their AI proposal for Ofgem assessment where they perceive the benefits of this would outweigh any burden in going through the assessment stage. Where there would still be a subsequent Ofgem assessment of costs, we would still consider whether costs have been economically and efficiently incurred in our assessment and so generators could choose to not put AI through an assessment stage and to incur the AI costs at their own risk.

  However, where the scope of works will not be subsequently assessed through an assessment of costs (such as for construction works under an OFTO build option, where bidders provide bids on the basis of the asset scope as set out tender specification at the ITT stage) then there would be greater risk to consumers if an assessment stage is optional. There may also be a case for requiring all AI that is significantly driven by wider network benefits to come through an assessment, given that this would be likely to be paid for by wider network users.

- Whether Ofgem's agreement of the economic case should be limited to taking a view on whether it would be economically justified to include AI within the scope of works, or whether it should go further and provide an upfront view on what the economic and efficient costs for developing the asset should be and provide a cost guarantee to the generator that they would recover all (or at least a specified minimum percentage, e.g. 75%) of those costs.

  Under the former option, Ofgem would provide an upfront view of whether we agreed that it would be economically justified to include AI within the scope of works (given the information available at that time). We would still test in our assessment of costs whether the asset has been developed efficiently, such as whether procurement has been managed efficiently. This would ensure that the generator retains an incentive to develop the transmission assets in a cost-effective manner and also ensures that an accurate and fair transfer value for those assets can be determined before their transfer to the OFTO.

  Under the second option, Ofgem would provide an upfront view of whether it would be economically justified to include AI within the scope of works, what the efficient costs should be of undertaking those works, and would also provide some comfort to the generator that they would recover all (or at least a minimum percentage) of those costs. Whilst this would provide additional comfort to the generator undertaking the AI, it does not however align with the approach Ofgem has indicated it will adopt for tender exercises under the enduring regime, i.e. that OFTOs (and effectively consumers) should not take on the risk of any inefficiently incurred costs for assets that are being developed by generators. This second option would also require a higher level of regulatory intervention and scrutiny of the precise nature of costs associated with the AI by Ofgem during the assessment, which could lead to delays.

AI assessment criteria

1.23. There are a number of options for assessment criteria. We have set out some initial thoughts on the high-level criteria we would use to inform our assessment and have invited views on these. The proposed criteria are the needs case for AI and how the proposed investment and delivery plan (timing and scope of the investment) addresses this needs case and the technical readiness of the project and different parties.

- Needs case: this element would be based upon the need to ensure that the AI is likely to have value in contributing to an economic and efficient development of the network and value for money for final consumers. It could cover the technical and economic case for the investment, considering the electricity transmission network as a whole, and the uncertainties that exist around the AI needs case. This could include demonstrating how including AI within the scope of works would ensure. Like for TII, this could also include the need for parties to demonstrate (through engineering studies and cost benefit analysis) that the AI makes sense relative to the alternatives and the dependencies of the justified economic case.

- A further key consideration in understanding the value for money for final consumers would be the extent to which transmission charging and user commitment arrangements could result in benefits, costs and risks being passed through to consumers.

- The level of user commitment provided by generators would be an important part in assessing the extent to which consumers could face stranding risks. As user commitment is triggered from the point when generators sign connection agreements, we consider that in a majority of cases we would expect connection agreements to be in place for a significant part of future generation projects to support the needs case for AI. However, our assessment could also consider AI where the needs case is driven by future generation developments where there is no connection agreement. In such cases, there would need to be a robust needs case demonstrating that the benefits of the identified AI are expected to heavily outweigh the costs to give confidence that the AI would provide value for money for consumers.

- Timing and scope: the aim of this type of criteria would be to supplement to the needs case, by considering evidence that the proposed AI project has been optimised from a scoping and timing perspective. For pre-construction works this could include exploring how the choice of the investment scope delivers value but also keeps options open or alternatively commits to a development path. For construction works it could include exploring how the AI optimises over a range of scenarios and therefore accounts for uncertainties (if any) around future generation and demand developments.

- Technical readiness: this criteria would serve to ensure that proposals that are brought to an assessment are at a minimum level of technical readiness to proceed to the next development stage, as otherwise there could be value from delaying the assessment stage to ensure that the assessment is made based on the best possible information. Requirements could include design details, delivery strategy, proposed or in place contractual arrangements and completed technical and commercial studies. These requirements could vary according to whether it was the first or second assessment stage.

AI case study: Irish Sea zone

1.24. The costs, benefits and impacts associated with both the coordination of offshore network developments and the potential introduction of an approach to AI will vary significantly amongst different offshore generation projects. However, as an illustrative example we include a summary of the Irish Sea zone case study analysis undertaken by TNEI/PPA Energy as part of the OTCP.

1.25. The model developed by TNEI/PPA Energy assumes the full built out of the Irish Sea zone (8x500 MW windfarms) and assumes that 2GW HVDC technology will be available. Figure 1 shows two possible transmission configurations for the zone as developed by TNEI/PPA Energy – a "radial" configuration and a "coordinated" configuration.

1.26. For the Irish Sea zone case study, TNEI/PPA's analysis suggests that the potential benefits from coordination could include:

- Overall capex savings (but higher costs in early build out stages)
- Greater flexibility in export routes for the offshore windfarm
- Fewer onshore reinforcements (consenting for the onshore reinforcement in this area is expected to be extremely difficult)
- The mitigation of onshore boundary limitations (Mersey ring).

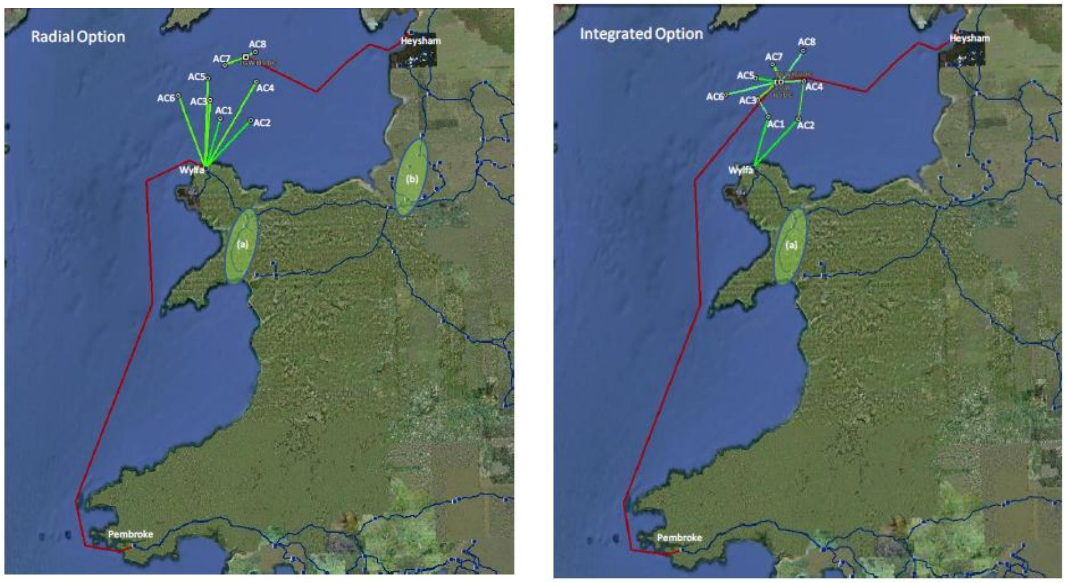

Figure 1 Possible 'radial' (left) and 'coordinated' (right) configuration for the Irish Sea zone. (Note: green denotes AC cables, red denotes HVDC technology and potential reinforcements of the onshore network are denoted by green ellipses.)

1.27. The analysis suggested that there is a need for significant AI under both radial and coordinated designs. Under the coordinated build option, there is a small increase in anticipatory spend required versus the radial build model (£14 million), but this could lead to £414 million savings in overall capital costs if all phases of the Irish Sea zone were built out as modelled.

1.28. Under the radial design, the proposal for the HVDC line between Wylfa and Pembroke would be likely to be dealt with through the onshore Strategic Wider Works mechanism. Through this, Ofgem would assess whether the economic case for such a link was sufficient to justify the funding needed. At present, there is no existing mechanism under the offshore regime for Ofgem to undertake an upfront assessment of the economic case of the HVDC line from the Irish Sea zone to Pembroke.

1.29. The offshore generator would not rely solely on this link for the export of its power, though it would be important at when the generation was running at high load factors. The link would represent a substantial investment which would be for the benefit of wider network users, including onshore generation and demand, as well as the offshore generators. It is likely that the user commitment and charging methodologies would not solely target liabilities on the offshore generator. This would raise the questions mentioned above about whether the offshore generator would have sufficient incentives to develop the asset cost-effectively and in a timely way if they took responsibility for it. We are also interested in views on whether generators would be willing to take on development responsibilities for links like this.

Impacts

1.30. This section considers the various costs and benefits associated with the introduction of an approach to AI to support the efficient coordination of offshore network developments and where there are specific impacts of the sub-options set out above. We consider impacts to:

- Consumers
- Competition
- Sustainable development
- Health and safety
- Other impacts - implementation

1.31. We also identify potential risks and unintended consequences which may arise due to the introduction of an approach to AI, and which are considered, managed and minimised by our initial proposals.

Consumers

1.32. The OTCP commissioned a cost-benefit analysis (undertaken by TNEI/PPA Energy and Redpoint Energy) in order to assess the benefits of pursuing coordination when developing offshore transmission assets for the connection of Crown Estate Round 3 zones. The analysis, taken across four different offshore generation deployment scenarios, suggests coordination has the potential to deliver savings of around 8-15% (£0.5-3.5 billion) when compared to a radial configuration, see Figure 2. The impacts of these savings on the sustainable development of the GB transmission network are assessed later in this impact assessment.

1.33. Whilst stranding risks associated with AI were not quantified in this cost-benefit analysis, Redpoint's analysis acknowledged that:

- The inclusion of such risks would reduce the benefits of coordination
- This reduction in benefits can be mitigated in part if the approach to support AI ensures that these risks are effectively managed.

The extent to which the options set out above manage stranding risk, both for consumers and for offshore generators, is discussed in paragraphs 1.37-1.39 below.

	NPV to 2030 £m (real 2011)		Reduction in cost from coordination	
	T1 (radial)	T2 (coordinated)	NPV £m (real 2011)	As a proportion of radial NPV
Scenario A	£5,784	£5,290	£494	8.5%
Scenario B	£12,468	£11,396	£1,072	8.6%
Scenario C	£19,275	£16,908	£2,367	12.3%
Scenario D	£23,976	£20,483	£3,493	14.6%

Figure 2 Summary of the cost-benefit analysis of coordination up to 2030 over four different offshore generation deployment scenarios (15 GW to 45 GW installed capacity by 2030). (Source: Redpoint Energy)

1.34. The benefits of AI for GB electricity consumers will be largely dependent on the type of coordination it supports.

- Analysis undertaken for the OTCP found that a coordinated onshore/offshore network has the potential to deliver timelier and more economic and efficient reinforcement of the onshore transmission network. However, there is a lack of clarity as to how offshore reinforcement of the onshore network will be developed under the existing regulatory frameworks. Our initial proposals for an approach, to AI which includes support for AI for wider network reinforcement, aims to address this issue, and could result in lower TNUoS charges and greater security of supply for consumers.

- Analysis undertaken for the OTCP found that coordination of transmission assets between offshore wind generators could in some cases, result in: lower overall capex and opex costs; more timely connections to the onshore network (through fewer planning consents); and increased transmission system flexibility and security of supply due to the possibility of multiple export routes[24]. Our proposed approach to AI, which includes support for generator driven AI, aims to facilitate this type of coordination. Consequently consumers may benefit indirectly from long-term reductions in offshore energy costs (provided market arrangements ensure consumers share in the reductions in transmission costs from coordinated networks).

1.35. Table 2 in Chapter 3 summarises the key parties that benefit from different types of AI and therefore our views on the appropriate high-level principles for user commitment and charging arrangements for AI.

[24] These benefits will also contribute towards DECC's vision of reducing the costs of offshore wind (development, construction and operations) to £100/MWh by 2020

1.36. One of the high-level principles in our approach to AI is to ensure that consumers only bear the costs of AI if they are likely to receive sufficient benefits to justify them. Our initial proposals for Ofgem assessment criteria would address this principle by considering the value for money for consumers as part of the needs case assessment.

1.37. Our initial proposals are aimed at ensuring that the development of coordinated offshore network is taken forward, when identified as the most efficient option, by providing regulatory certainty around the treatment of AI within the offshore regime. However, our approach to AI should also ensure that, where consumers are required to bear the costs of AI, they are protected from unnecessary or inefficiently incurred costs. This strongly supports that an Ofgem assessment provide better insight for generators as to how we will perceive decisions on the scope of AI when we undertake our assessment of costs, to enable generators to take such assets forward where we are satisfied that this aligns with consumers' interests.

Stranded assets

1.38. The conclusions of the OTCP identify that there is a high level of uncertainty surrounding the long-term build-out of offshore generation. In cases where AI is undertaken and expected build out is not reached, AI could result in stranded transmission assets. One of the high-level principles in our approach to AI is to ensure that the stranding risk associated with AI is allocated appropriately amongst those who can best manage it and who stand to benefit from the AI (i.e. following cost reflective principles).

1.39. As detailed above, we expect consumers to benefit from the introduction of an approach to AI. Our initial proposals for assessment criteria that we would use when assessing AI opportunities aim to ensure that we would only agree an economic case where any stranding risks that consumers could be exposed to are significantly outweighed by the potential benefits.

1.40. Under our initial proposals, consumers' exposure to stranding costs would also be driven by the level of uncertainty about future generation when making decisions on AI. This means that there are benefits from delaying decisions on AI to allow this uncertainty to resolve, but this may have implications for the timely delivery of projects. Our initial proposals aim to address this trade-off by potentially introducing two new Ofgem assessment points, where Ofgem would assess the economic case for including AI within the scope of works at the pre-construction and then the construction stages. This staged approach would mean that further information could be obtained between the first and second assessment points, so that Ofgem's assessment of AI being included in the scope of construction works could be made on the basis of a more robust economic case.

Competition

1.41. Competition is central to the existing offshore regulatory regime, with OFTO licences granted by Ofgem through competitive tender exercises. To date the existing offshore regime has succeeded in attracting competitive tender bids and allowing new entrants to enter the energy sector.

1.42. Our initial proposals for an approach to AI have progressed alongside the continuing development of tender exercises under the enduring regime and seek to support competition within the enduring offshore regime.

1.43. If OFTO build is the main option for assets that are significantly driven by wider network benefits then this could potentially boost competition, in that it would potentially provide an increased opportunity for new entrants to compete for the construction of transmission assets. These initial proposals would also align with Ofgem's work to introduce competition to onshore electricity transmission25.

1.44. However, the option of TOs being responsible for pre-construction works could mean there would also be a need to ensure that these works were carried out in a way that facilitated a level playing field in the OFTO tender exercise and an easy process for transfer of assets. We consider this could require licence obligations on the TO (broadly equivalent to the obligations that generators will face under an OFTO build exercise).

1.45. We do not foresee that our initial proposals will have any substantially different effects on small or large firms but welcome views on this.

Sustainable development - managing the transition to a low carbon economy

1.46. The UK Renewable Energy Roadmap (2011) central range suggests that that there could be between 11 to 18GW of offshore wind capacity by 2020. In addition, DECC has a target of reducing the costs of offshore wind (development, construction and operations) to £100/MWh by 2020. The OTCP found that generator driven AI may facilitate the development of a more economic, efficient and timely offshore transmission network and help contribute towards these targets.

1.47. Similarly, the OTCP found that AI to support wider network reinforcements could help to deliver a timelier and more economic and efficient reinforcement of the onshore transmission network and may reduce onshore congestion.

[25] For further information see http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=150&refer=Networks/Trans/PriceControls/RIIO-T1/ConRes

This could potentially allow for earlier connection dates or lower transmission charging for onshore low carbon generation.

1.48. The impact of these changes should therefore be, where possible, to reduce costs and encourage greater deployment of low carbon generation. This should lead to reductions in GB carbon emissions, though noting that because electricity generation is included in the EU Emissions Trading Scheme there would not be net carbon savings at the EU level. As the costs of transmission are relatively low compared to the costs of low carbon generation, it is likely that the carbon savings impact could be relatively modest.

Sustainable development - eradicating fuel poverty and protecting vulnerable customers

1.49. We do not foresee that our initial proposals will have any significant impacts in this area but welcome views on this.

Sustainable development - promoting energy savings

1.50. We do not foresee that our initial proposals will have any significant impacts in this area but welcome views on this.

Sustainable development - ensuring a reliable electricity supply

1.51. The OTCP concluded that a coordinated network may increase the security of both the onshore and offshore transmission networks by: providing multiple export routes for offshore generators; building redundancy into the offshore network; and providing new opportunities for a more economic and timely reinforcement of the onshore network.

1.52. However, the OTCP also identified that in some cases, coordination may also lead to a decrease in the security of supply in transmission assets during the early build out of the offshore windfarm. Our proposals provide mitigation against this by maintaining the ability for generators to determine what level of security they require when making their connection requests.

Sustainable development - supporting improved environmental performance

1.53. The OTCP concluded that coordination has the potential to minimise environmental impacts (and necessary planning applications) if they reduce cabling and landing sites in sensitive areas.

Health and safety

1.54. We do not foresee that our initial proposals will have any significant impacts in this area but welcome views on this.

Other impacts - implementation

1.55. As acknowledged earlier, identifying and constructing AI according to a central design blueprint would require substantial changes to the offshore regime. We consider that the other options we have set out would represent incremental changes with the offshore regime.

1.56. We note that aspects of the enduring regime remain under development, and the initial proposals in this consultation do not prejudice the outcome of the consultation on the enduring tender exercise. However, we anticipate that some of the options for introducing the approach to AI laid out in this assessment will require amendments to the existing offshore regime and other regulatory frameworks, including possibly changes to:

- Tender Regulations
- TO/OFTO/offshore generator licence
- Industry code changes

1.57. Our next steps will involve a detailed assessment to consider how the implementation mechanisms for our initial proposals, including considering the legal framework for changes and how these need to feed through to industry licences and codes. We would welcome views on how the initial proposals we set out could be implemented.

Risks and unintended consequences

1.58. Analysis has identified several potential risks associated with setting out a regulatory approach to AI. These are informed by the conclusions of the OTCP and include:

- Asset stranding– impacts are assessed in the *consumer* impacts section
- Potential temporary reduction in transmission system flexibility and security of supply during early phases of offshore build out - impacts are assessed in the *sustainable development* impacts section
- Technological challenges, for example readiness of 2GW technology. These risks are expected to be managed through our initial proposals for

an approach for identifying AI, where the NETSO and generators would consider what the most economic and efficient means to connect the generation to the network was given the available technology at that time.

- Undue delays to the development of transmission assets due to the introduction of Ofgem assessment points. Our initial proposals seek to mitigate this by limiting the number of assessment points and by considering whether they could be optional. We are also seeking views on the best timing for the assessment points given the need to consider the ability to build a robust needs case for AI and project development timelines.

- The risk of AI being undertaken where this does not align with consumers' interests. For example, this could be where later phases of generators stand to benefit from AI but consumers face the stranding risk if that generation does not come forward. We would aim to mitigate this risk through our assessment criteria when considering the economic case for including AI within the scope of works, which would consider the allocation of benefits, costs and risks to the consumers. There may also be a case for some changes to transmission charging and user commitment arrangements to better support this approach.

- The risk of parties not being effectively incentivised to undertake AI. We have considered this issue through the different options for an approach to AI, including the roles of different parties in identifying and undertaking AI.

Post-implementation review

1.59. The nature of a post implementation review may differ depending on which option is ultimately adopted. However, we anticipate that if implemented, the impact of any proposal would be monitored through our regular engagement with parties involved in the offshore regime.

Conclusion

1.60. Based on the analysis in this impact assessment, we believe there are likely to be significant benefits from introducing a clearer approach to AI in the offshore regime. We also believe that the analysis suggests that some of the sub-options we consider in this impact assessment have significant benefits over others, as is reflected in our proposals in Chapter 3. For other sub-options the analysis is less clear-cut, and we are inviting stakeholders to provide views to help identify the best way forward. We welcome consultation responses on all of the options covered and will consider these comments before arriving at a final decision on this matter.

Appendix 3 –'Straw man' of potential AI assessment and approval approach

Summary

This appendix sets out in more detail a 'straw man' for a potential approach to AI. The five key stages for an AI approach, including potential Ofgem assessment stages, are outlined in figure 1 below and the text that follows.

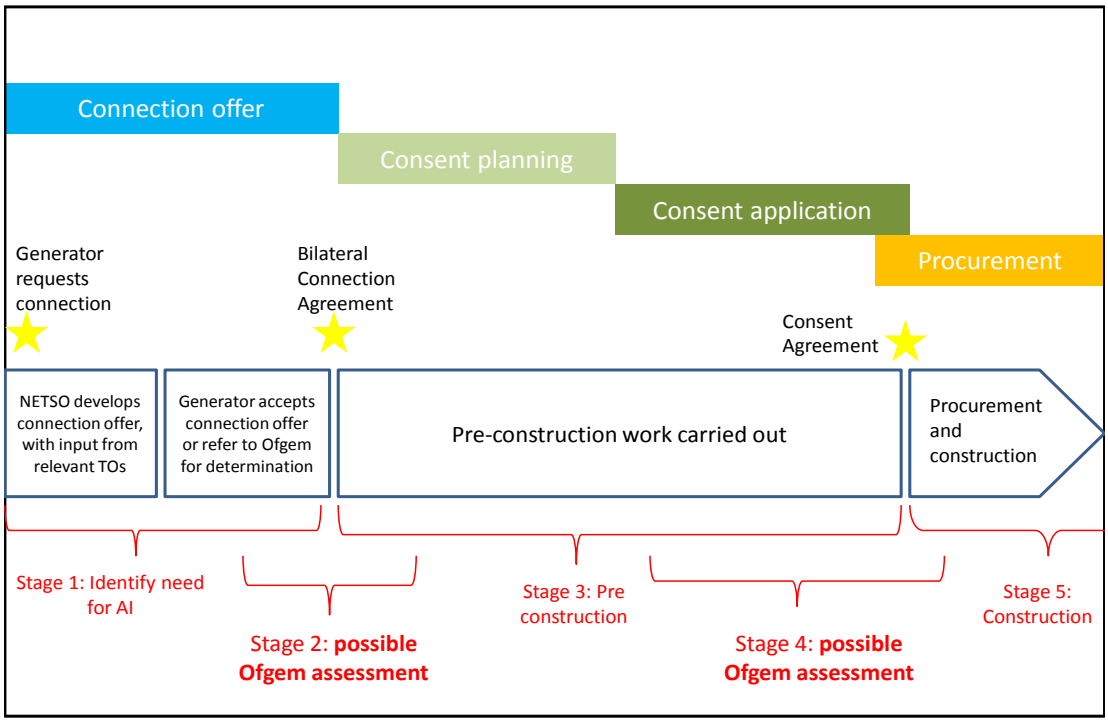

Figure 1: Potential AI assessment approach

Stage 1: Identifying the need for and type of AI

1.1. Initial identification of AI need and type could occur through the connection application and offer process. The process presents opportunities for different parties to identify where there is a case for building an anticipatory element into the scope of works, whether these are driven by the potential for connecting other offshore generators or for wider system benefit. This could work as follows:

- As now, generators are able to undertake pre-application discussions with the NETSO before making their formal connection application. In

determining the form of their application, generators would be able to consider AI opportunities for their own projects and also enter into discussions with other generators in their area to explore the scope for coordination.

- Once a generator has submitted their connection application, the NETSO has three months to make a connection offer to the generator. In determining their connection offer, we would expect the NETSO to ensure that connection offers meet the needs of the connecting party while representing the most economic and efficient way to develop the NETS. This would identify the appropriate offshore generation connections required given a holistic view of generator needs in the area.

- The NETSO would also have a role in identifying economic and efficient opportunities for AI in assets that would have wider network benefits, drawing on inputs from the relevant TO(s) for that area (potentially including OFTOs).

- Once the generator had received the offer, they would have three months to accept it. If they accept, this forms the Bilateral Construction Agreement (BCA). Once the BCA is agreed, the NETSO would then conclude the Transmission Owner Construction Agreement (TOCA) for any work they need to undertake as part of the connection.

- If parties were not able to agree on the best option for connection then normal dispute resolution procedures would apply, and Ofgem could provide a determination of the most economic and efficient connection through that process. In this case, this determination could substitute for, or streamline, the first potential Ofgem AI assessment stage.

1.2. To achieve such an outcome there may be a need for the NETSO to have increased ability to feed into the high-level specification (e.g. capacity levels, additional circuit breaker bays on an offshore platform) for offshore assets.

1.3. A further key issue here is how "integrate-able offers" to a generator or group of generators will be formed to identify a coordinated build requirement. Such offers might lead to situations where one generator is reliant on another generator constructing assets to allow both to be connected to the NETS in a coordinated fashion. We welcome your views on whether standard commercial arrangements and the Connection and Use of System Code (CUSC) can support such activity, and whether these issues need to be considered further as part of the development of the approach to AI.

1.4. Given possible differences in pre-construction and construction roles, it may also be necessary at this stage to classify whether different proposed assets included within a connection offer would be classified as offshore generator-driven or being driven by wider network benefits. This classification could be undertaken by the NETSO as part of the details of the connection offer.

1.5. We consider that no other parties should have a formal role in identification of AI other than generators, the NETSO and relevant existing TOs in an area who already have a formal role in the connection offer process. We would also welcome views on whether there might be a need for AI to be identified outside of the formal connection offer process.

Stage 2: First potential Ofgem assessment

1.6. There may be potential for an early Ofgem assessment where we could provide our view of whether it would be economic and efficient to include AI within the scope of pre-construction works. The aim of this would be to facilitate the offshore tender exercise by giving greater certainty in relation to the treatment of AI when undertaking our later assessment of costs. The approach could vary depending on who was going to be undertaking the pre-construction works.

1.7. Where a generator would be undertaking pre-construction works, the potential assessment could work as follows:

- The generator that would be undertaking the works would lead on submitting the economic case, but would draw on the NETSO, local TOs and other generators as necessary.

- If we agreed that it would be economic and efficient to include AI within the scope of pre-construction works, this would provide greater certainty in relation to our treatment of AI when we later undertook our assessment of costs (to inform the asset transfer value, either ahead of or following construction, depending on whether the generator chose OFTO or Generator build). Specifically, we might commit to not disallowing costs on the basis of it having been uneconomic to have included the AI in the scope of pre-construction works.

- Generators could choose whether to submit proposed AI to Ofgem for assessment or to proceed with AI where we have not agreed the economic case. In such cases, when we later undertook our assessment of costs we may conclude that it had not been economic and efficient to include AI in the scope of pre-construction works and so might not include costs associated with the AI in the asset transfer value. However, there may be cases where generators have confidence that the AI is economic and efficient and so choose not to submit an economic case to Ofgem for early assessment.

1.8. Generators could recover the economically and efficiently incurred costs of undertaking the AI at the point where they transfer the asset to an OFTO, or if they sold on some of the assets to other parties. In determining the transfer value for the assets, we propose that we would still consider in our assessment of costs whether the costs of undertaking the agreed scope of works (including for any AI) had been efficiently incurred. We consider this

would be necessary to ensure that generators have continued incentives through the process to undertake works efficiently.

1.9. As we set out in the next section, there may be a need for TOs to undertake pre-construction works for assets that are significantly driven by wider network benefits. Such an option could be taken forward as follows:

- The NETSO leads on submitting the economic case to Ofgem, supported by local TO(s) and generators as necessary. This would need to incorporate proposals from the local TO(s) on how they would undertake the pre-construction works.

- If we agreed that it would be economic and efficient to undertake that scope of works, then we would agree to fund the TO through their licence. In the case of onshore TOs, their funding could be provided through the RIIO-T1 settlement, subject to output measures being met.

1.10. For either type of AI, Ofgem would make its judgement on the economic case for the inclusion of an anticipatory element in the scope of works based on whether it would be likely to contribute to an economic and efficient network and be aligned with consumers' interests. The factors that we would consider and also the timing of this and the potential second Ofgem assessment stage are discussed further in Chapter 3.

Process Step 3: Pre-construction works

1.11. We propose that pre-construction of offshore generator-focused AI would largely follow the framework set out in our December 2011 consultation. This means that generators would undertake pre-construction works before then following one of the Generator build or OFTO build options.

1.12. For pre-construction works for assets where the AI would be driven by wider network benefits, a key consideration is which parties are best placed to undertake the work economically and efficiently, to high standards and in a timely manner.

1.13. These assets would not be solely for the purpose of exporting offshore generators' power and would be paid for by and provide benefits to other users as well as the offshore generator. This means that there is a risk that the offshore generator may not have the same incentives to ensure such an asset is built in a timely, cost-effective and quality manner as compared to where they are building their local transmission connections (which they are highly reliant on for the export of their power and face a high proportion of the costs). They may also be unwilling or have insufficient resource to take on the liability and responsibilities for developing such assets.

1.14. This suggests there is a need to consider alternative approaches for who should undertake pre-construction of offshore assets where the AI is significantly driven by wider network benefits. We have considered four main options:

- Option 1: Maintain the existing approach, whereby offshore generators would be responsible for pre-construction.
- Option 2: Fund existing TO (or TOs if, for example, the asset crosses different TO's geographical boundaries) in the area to undertake the pre-construction works.
- Option 3: Continue to give generators the choice of undertaking pre-construction, but with the local TO taking on the activity should the generator prefer not to take on the responsibility.
- Option 4: Ofgem would tender for the pre-construction works.

1.15. The impact assessment at Appendix 2 considers the incentives on different parties, and the pros and cons associated with these options in more detail.

1.16. Where a local TO might have a role, measures may need to be included in the licence obligations of the TO to ensure a level playing field during the OFTO build tender, such as providing full information to all bidders through the data room as part of the tendering process. This might also include ensuring that land acquisitions and all consents and permissions associated with the works are transfer ready.

1.17. In the short-term at least it seems that the TOs most likely to undertake such works would be the existing onshore TOs. However, we would welcome views on whether OFTOs might be involved in undertaking pre-construction works in their local area, and what measures would need to be in place to make this work. Unless the pre-construction work is being undertaken through an early OFTO option (which we have proposed will not be a priority area for development in our December 2011 consultation), this might take the form of a local OFTO receiving additional funding through its licence to undertake just the pre-construction works.

1.18. As part of the pre construction phase we suggest that whichever party is undertaking pre-construction activities could also be working up the economic case to feed into a second possible Ofgem assessment.

1.19. We do not envisage a formal Ofgem role at this stage but we would expect engagement with the lead party to ensure that the correct information is being prepared and to allow us to update our analysis. This would allow us to undertake the analysis needed at a second assessment stage as quickly as possible.

Process Step 4: Second possible Ofgem assessment

1.20. The aim of this would be to facilitate the offshore tender exercise by giving greater certainty in relation to the treatment of AI when undertaking our later assessment of costs. Where projects involve AI at the construction stage, we propose that there could be a second Ofgem assessment. This would allow us to provide a view on whether including AI within the scope of construction works would be likely to contribute to an economic and efficient network and be aligned with consumers' interests.

1.21. A second assessment stage may be needed given the greater size of financial commitment involved at the construction stage. The second assessment stage would focus on construction works only. It is unlikely that this would lead us to revisit our view on whether it was economic and efficient to include AI in the pre-construction works (subject to any conditions we set out at the first assessment stage continuing to be met).

1.22. The process could vary depending on whether the AI is to be undertaken as part of a Generator build or OFTO build option.

1.23. If the assets are to be built under a Generator build option, we propose that this would work in a similar way to the first assessment stage:

- The generator would be able to seek Ofgem's view of including AI in the scope of construction works by submitting the economic case to Ofgem (supported by the NETSO and other parties where necessary).

- If we agreed it would be economic and efficient to include AI within the scope of construction works, this would provide greater certainty in relation to our treatment of AI when we later undertook our assessment of costs (to inform the asset transfer value following construction). Specifically, we might commit to not disallowing costs on the basis of it having been uneconomic to have included the AI in the *scope* of construction activities.

- Generators could choose whether to submit AI to Ofgem for assessment or to proceed with AI where we have not agreed the economic case.

1.24. As with pre-construction works, generators would generally recover the capital costs of undertaking the AI at the point where they transfer the asset to an OFTO. We consider there is a need for generators to have strong incentives to construct the agreed scope of works efficiently. We are therefore not proposing to provide any comfort to parties that they will be able to recover the costs of AI unless the works are undertaken efficiently. In determining the transfer value for the assets being taken on by an OFTO, we propose to assess whether the costs of undertaking the agreed scope of works had been efficiently incurred in our assessment of costs. This aligns with the

proposals we set out in the December 2011 consultation in relation to cost assessment in general.

1.25. If assets are to be built under an OFTO build tender exercise then the party responsible for pre-construction might be a generator or a TO depending on the option being taken forward. They would be responsible for developing a tender specification for the OFTO build tender exercise in line with the arrangements set out in the December 2011 consultation. We propose that the second Ofgem assessment might involve in this scenario:

- A requirement on either the NETSO or the party undertaking pre-construction works to submit details of the BCA to Ofgem if it included AI within the scope, with a supporting economic case for why AI should be included with the scope of construction works(with support provided from other parties as necessary to compile this).

- If we agreed that it would be economic and efficient to include AI within the scope of construction works then it would be undertaken by the appointed OFTO.

- If we did not agree it would be economic and efficient to include AI in the scope of construction works then we would provide our reasoning for this, and the generator or TO could re-submit a revised economic case.

Process Step 5: Construction activities

1.26. We propose that construction of offshore generator-focused AI could largely follow the framework set out in our enduring regime consultation paper. This means that generators would have the option to adopt either a Generator build or OFTO build approach in their connection agreement.

1.27. For assets that are for wider network reinforcement, we consider that the issues noted with regard to generators' incentives to undertake pre-construction also apply here, and this carries even greater risks for consumers given the substantially higher costs involved in construction activities. There are also significant potential impacts for other users reliant on the asset being developed.

1.28. The impact assessment at Appendix 2 provides further analysis of different parties' incentives at the construction phase and the pros and cons of continuing to allow such assets to be built through either the Generator build or OFTO build options. Based on this analysis, we believe there is a need to consider whether there would need to be enhanced delivery incentives under the Generator build option for assets where the investment is significantly driven by wider network benefits, or whether the OFTO build option should be the main focus for this type of asset.

Appendix 4 – The approach to AI under the onshore transmission regulatory regime

1.1. The Transmission Investment Incentives (TII) framework has provided project-specific, interim funding for critical, large-scale onshore investments which Transmission Owners (TOs) identify are required to support achievement of the Government's 2020 renewable energy targets. This has allowed investments to proceed where they involve anticipatory investment, which has been defined in the onshore context as "capital expenditure based on anticipated future requirements, rather than prevailing contract requirements[26]". In this context, contract requirements refer to Bilateral Connection Agreements (BCAs) for grid connection between generators and NGET.

1.2. A "staged approach" to consideration of TII funding requests was adopted. Large scale projects have received incremental tranches of funding over time, by way of an annual revenue figure in a new special licence condition[27] for each TO. Funding decisions have been made at different points in time to fund a defined sub-component ("stage") of the overall works, taking into account the prevailing justification for the investment and the readiness of the TO to commence work.

1.3. The TII framework is in effect until 2012/13, after which point it will be replaced with mechanisms under RIIO-T1[28]. For all wider works projects that receive funding under the TII framework, any further funding that is required from 1 April 2013 will be addressed under RIIO-T1.

1.4. For any wider works projects that will commence during RIIO-T1, funding requests will be assessed under an appropriate mechanism, allowing essential investment to take place in a timely manner. This will include scope for within-period determinations of the need for funding of some potential wider works assets through the Strategic Wider Works (SWW) mechanism. This mechanism will allow for assessment of TOs' proposals for a limited number of

[26] For more information on the background to AI under TII, see http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/tar/Documents1/100118_TOincentives_final_proposals_FINAL.pdf

[27] Special Condition D11 ("Adjustment to the Transmission Network Revenue Restriction due to Transmission Asset Owner Incentives") for NGET and new Special Condition J12 ("Adjustment to the Transmission Network Revenue Restriction due to Transmission Asset Owner Incentives") for SHETL and SP Transmission.

[28] Further information available at http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1decisionoutput.pdf

wider works assets, on the basis of substantial materiality, needs case and TO readiness. Where investing in such assets would be in consumers' long term interests, and subject to decisions on the appropriateness of a competitive approach, we will adjust the TO's funding allowances to provide additional revenue to cover the efficient forecast costs.

1.5. The SWW arrangements would operate alongside the framework for third party delivery of onshore transmission assets[29]. We will be developing this framework over the coming months as we finalise the SWW arrangements. We will take into account the interactions between the two frameworks, including the appropriate point at which we would assess whether a project is suitable for the competitive approach.

[29] The latest consultation on third party delivery is available here: http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/111216_Consultation_Competition.pdf This consultation closed on 10 February.

Appendix 5 – Tender exercises under the enduring regime: background information

1.1. Ofgem's Offshore Electricity Transmission: Consultation on tender exercises under the enduring regime (hereafter referred to as the December 2011 consultation), which closed on the 17 February 2012, set out:

- Our proposed approach to the Offshore Transmission Owner (OFTO) build option regime
- Proposed changes to the Generator build option where it differs from the approach taken for transitional tender exercises
- Initial thinking on the phased or staged construction of transmission assets

1.2. We aim to set out our latest position on tender exercises under the enduring regime in late spring, after considering responses to the December 2011 consultation.

1.3. This Appendix summarises the two build options proposed by the December 2011 consultation and provides further details on how we expect the proposed AI process to sit within the enduring regime. Please refer to the original consultation for further information.

Overview of build options

1.4. The December 2011 proposes two options for the delivery and operation of transmission assets. We expect that both options, and the proposed OFTO build option in particular, will support the upcoming investment opportunity and broader network development by encouraging new entrants and new sources of finance, while also enabling innovation in asset construction.

1.5. These two options, whilst only proposals at this stage, provide a basis for this consultation document.

- **OFTO build** – Under the OFTO build option, we propose that the generator will obtain the connection agreement and undertake high level design and pre-construction works. The OFTO (appointed via competitive tender) will procure suppliers, negotiate and finalise construction contracts, and deliver the build programme. The OFTO will operate and maintain the transmission assets.

- **Generator build** - The Generator build option is similar to the approach taken for the transitional tender exercises. The generator will obtain the connection agreement and take responsibility for all aspects of design, pre-construction, procurement and construction (in accordance with a series of common standards) of the transmission infrastructure, with a transfer of ownership to an OFTO (appointed via competitive tender) taking place after the generator has completed construction. The OFTO will operate and maintain the transmission assets.

Overview of the stages of transmission asset development

1.6. The enduring regime involves a series of common features, irrespective of the point at which an OFTO is appointed under Generator build or OFTO build.

- OFTOs will be appointed and granted a transmission licence through a competitive tender process run by Ofgem under the Tender Regulations.

- Codes and technical rules require the development of infrastructure to a consistent set of standards.

- OFTOs will be required, through licence obligations and industry codes, to develop and operate systems efficiently.

- Long term revenues and incentives will be provided under the OFTO licence to provide certainty for industry participants. Project-specific licence conditions, including any performance obligations, will be determined by Ofgem as part of each tender exercise.

1.7. The broad stages of transmission asset development are summarised below, and are also shown in Figure 1 overleaf. This also includes the potential timing of the two AI assessment stages proposed in this consultation.

1.8. **Connection offer**: any generator wishing to connect to the National Electricity Transmission System (NETS) must make an application in writing to NETSO, under the CUSC. When an offshore generator seeks connection to the NETS, it will be given a Generator build offer, unless it indicates a preference for an OFTO build offer.

1.9. **High level design**: the generator will produce a high level performance specification as part of their pre-construction works. This will set out the outputs required based on the generator's user requirements and the connection agreement with NETSO, and will reflect the views of NETSO and Ofgem (where appropriate). Under the OFTO build option this would form the tender specification against which bidders would develop their detailed asset design.

1.10. **Pre-construction**: refers to the works undertaken by the generator before construction of the transmission assets, including the environmental impact assessment, land acquisition and acquiring necessary property rights and consents. These works are described further in chapter 3.

1.11. **Procurement**: refers to agreement with the supply chain on the specification for works, securing manufacturing capacity and negotiating and signing construction contracts with suppliers.

1.12. **Construction**: refers to the manufacture of transmission assets following procurement of suppliers, and the period through to completion of construction of the transmission assets. It also includes commissioning of those assets, which refers to a set of tests and related works to demonstrate that the transmission assets are compliant with relevant industry codes (and any site specific contractual specifications agreed with NETSO), and fit for use as a transmission system or part of a transmission system.

1.13. **Operation and maintenance**: refers to the ongoing operation, maintenance and, eventually, decommissioning of the transmission assets.

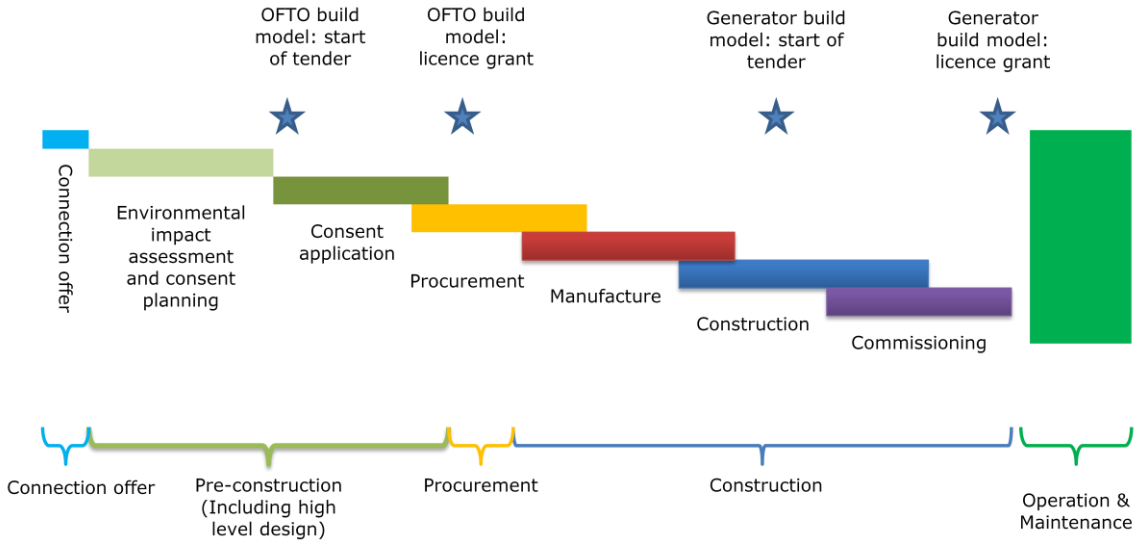

Figure 1 -Indicative stages in the development of the transmission assets

Phasing

1.14. We are aware that transmission assets within many of the sites and zones licensed by the Crown Estate likely to be tendered under the enduring regime are currently due to be constructed incrementally in phases over the course of several years. Many of these sites or zones are likely to be subject to two or more discrete final investment decisions, planning consent submissions and/or bilateral connection agreements.

1.15. Given the very long timescales expected for some windfarm developments, the December 2011 consultation proposed that the objectives of the offshore regime will best be met by running a separate tender exercise for each committed phase (or potentially phases, if they are concurrent) within a site/zone and sought views on this option.

Appendix 6 - Glossary

A

AI

Anticipatory Investment

Authority

The Gas and Electricity Markets Authority

B

BCA

Bilateral Connection Agreement

C

Codes

The licences define at high level the obligations with which the licensee must comply. These obligations and the processes intended to enable the licensee to comply with its licence obligations are defined in detail in documents referenced by the licence (industry codes and the security and quality of supply standard, GBSQSS). In respect of the development of the offshore transmission regime, these are collectively known as the "standard frameworks documents".

CUSC

The Connection and Use of System Code

D

DECC

Department of Energy and Climate Change

Developer

The entity responsible for the construction of the generation assets and, under Generator build, the transmission assets

E

EMR

Electricity Market Reform

Electricity Act

The Electricity Act 1989

Enduring Regulatory Regime

The enduring regime for offshore electricity transmission

ENSG

The Electricity Networks Strategy Group

G

Generator build

Where a generator would design and construct the transmission assets, with a transfer of ownership to an OFTO after the generator had completed

GW

Gigawatt

H

HVDC

High Voltage Direct Current

I

Interface

The substation which connects the offshore transmission assets to the onshore transmission system

ITT

Invitation to Tender

M

MWh

Megawatt Hour

N

NETS

National Electricity Transmission System

NETSO

National Electricity Transmission System Operator

NGET

National Grid Electricity Transmission

NSCOGI

North Seas Countries' Offshore Grid Initiative

O

ODIS

Offshore Development Information Statement

Ofgem

Office of Gas and Electricity Markets

OFTO

Offshore Transmission Owner

OFTO Build (As proposed in December 2011 consultation)

Generators notify Ofgem that they have chosen OFTO build and wish a tender to be run prior to consent submission. The generator will carry out pre-construction works. Prospective OFTOs then bid their approach to the procurement, financing, construction, operation, maintenance and de-commissioning of transmission assets, and the costs associated with carrying out these activities. Revenue stream starts when transmission construction works are completed.

OTCG

Offshore Transmission Coordination Group

OTCP

Offshore Transmission Coordination Project

OWG

Offshore Wind Generator

P

Project TransmiT

Ofgem's independent review of the charging arrangements for gas and electricity transmission networks, and the connection arrangements that DECC has explicitly left for Ofgem and the industry to resolve.

Q

Qualifying project requirements

The requirements a project must meet in order to be eligible for a tender exercise as defined in Schedule 1 of Electricity (Competitive Tenders for Offshore Transmission Licences) Regulations 2010

R

Radial connection

A single, standalone connection from one windfarm to shore.

RIIO

Revenues Incentives Innovation Outputs

RIIO-T1

RIIO-T1 (formerly known as TPCR5) will be the first transmission price control review to reflect the new regulatory framework resulting from our RPI-X@20 review

S

SO

System Operator

SWW

Strategic Wider Works

SYS

Seven Year Statement (National Grid)

T

TO

Transmission Owner

TOCA

Transmission Owner Construction Agreement

Transmission Assets

Transmission assets are defined in Paragraph 1 (3)(a) of Schedule 2A to the Electricity Act 1989 (the 'Electricity Act') as, '*the transmission system in respect of which the offshore transmission licence is (or is to be) granted or anything which forms part of that system*'. The transmission system is expected to include subsea export cables, onshore export cables, onshore and offshore substation, and any other assets, consents, property arrangements or permits required by an incoming OFTO in order for it to fulfil its obligations as a transmission operator.

Transitional Regime

The transitional tender round for offshore transmission licensing

TYNDP

European Ten Year Network Development Plan

Appendix 7 - Feedback questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

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