

# Proposals for the STC Framework as applied to Offshore Transmission

## Paper for STC Working Group on Offshore Transmission

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### 1. Introduction

This note outlines the provisions that NGET sees as essential components in the System Operator – Transmission Owner Code (STC) framework as applied to offshore transmission. These are needed to both define and secure the offshore transmission services required to enable NGET to discharge its obligations to offshore users who are physically connected to parts of the GB transmission system that are provided by another transmission licensee.

Many of these provisions stem from NGET's obligations to users as stipulated in the Connection and Use of System Code (CUSC). Some provisions are required to meet Grid Code Requirements (which can themselves be traced back to the CUSC) with a number driven directly by Transmission Licence requirements.

NGET's proposed approach is outlined below. In general this involves:

- Specifying the deliverables to be provided by the Offshore Transmission Owner (OFTO) prior to the offshore network coming into operational service including;
  - Required information, certification or specification;
  - How it should be delivered or demonstrated;
  - Timescales for delivery; and
- Specifying how the offshore transmission service will be defined and measured for the lifetime of the assets.

### 2. Background

Some members of the STC working group on offshore electricity transmission expressed the view that the arrangements embodied in the STC were not robust enough to manage the delivery of transmission infrastructure by multiple new OFTOs. They had reached the view that the current STC was better suited to managing existing arrangements between incumbent TOs rather than multiple new networks and network owners. Group members were in general agreement however that many of the existing STC provisions were applicable offshore.

This note examines NGET's view of the provisions required within the STC for offshore transmission and the drivers behind these (including where applicable with reference to the CUSC).

It goes on to suggest how these provisions could fit into the STC framework of the STC itself, the Code Procedures (STCPs) and bilateral agreements between NGET and OFTOs.

### 3. Overview

As discussed above, there was a general consensus at the STC Working Group that current STC framework, and the provisions contained within it, are generally applicable to offshore transmission. However, there are a number of

differentiating factors between the existing onshore TOs and potential OFTOs which may necessitate a different approach, by enhancing, strengthening or specifying provisions in more detail. These are:

- The OFTO is building an entirely new and discrete network rather than expanding on existing service provision;
- The OFTO will not be subject to the regular price reviews which are performed on the existing TOs; and
- The OFTO may not have a track record of delivering electricity infrastructure under the UK's legal and regulatory frameworks.

NGET has identified the following areas of the STC which need to be developed to cater for these differences:

- **The TO Construction Offer as applied to OFTOs** – the terms under which the OFTO delivers the offshore infrastructure required to deliver the user's connection including an OFTO Construction Agreement;
- **Technical, design and operational Performance Criteria** – design criteria and technical specifications as applied to offshore transmission networks;
- **User and network interfaces** – information and agreements required to manage both onshore and offshore interfaces;
- **Service Capability Specification** – the enduring capability of the offshore network as delivered after design, construction and commissioning;
- **Availability and Performance Criteria** – agreed methodology for defining performance and availability measures in relation to Transmission Service Provision; and
- **TO Revenue** – collection of and any adjustments to OFTO revenue necessitated by the OFTO Incentive arrangements.

The STC provisions relating to investment planning will also need to be adapted for offshore transmission to reflect the fact that the OFTO will not have ongoing investment planning responsibilities equivalent to those borne by onshore licensees, but will be affected by third party works.

#### 4. TO Construction Offer

It is anticipated that a package similar to the TO Construction Offer set out within the existing STC will be provided to NGET as an output from the OFTO selection process. This offer will contain key information to be included in the final offer from NGET to the user and should include a bilateral agreement equivalent to a current TO Construction Agreement.

This agreement will be essential to NGET's formulation of a connection offer as specified in the CUSC.

Under the current framework, TOs are free to add terms into construction agreements to reflect both connection specific issues and to reflect their own view of the required terms (as they may not feel that the standard terms adequately protect their interests). However, given the number of prospective OFTOs, there is a need for new provisions applicable to offshore to restrict agreements to a set of standard (possibly expanded) terms in order to:

- ensure that offshore users are treated equitably;

- manage any post-tender changes (including user driven changes); and
- allow offers to be processed by NGET and passed on to users efficiently and as early as possible.

## 5. User and Network interfaces

The STC currently stipulates a number of deliverables with respect to new transmission infrastructure at the user interface. These are:

- 1) A Connection Site Specification to provide the information required for the Interface Agreement under CUSC 2.11.1
- 2) Connection Site (Safety) Rules as per CUSC 2.10.1
- 3) Site Responsibility Schedule as per Grid Code CC7.3.1
- 4) Communications between NGET and the User as per Grid Code CC.6.5

For items 1 to 3, similar deliverables are required at the interface with the onshore network which will be new requirements within the STC framework.

These items are essential for the safe operation of the transmission system and therefore their delivery should be specified within the bilateral agreement between NGET and the OFTO concerned.

## 6. Technical, Design and Operational Criteria

The current STC framework places obligations on TOs to meet “licence standards” and the “minimum technical, design and operational criteria and performance requirements set out or referred to in [Grid Code] Connection Conditions 6.1, 6.2, 6.3 and 6.4 and in Planning Code 6.2.”

This means:

- Designing and building a network which complies with the SQSS;
- Designing the network to operate within and meet frequency variations, voltage variations, voltage waveform quality and voltage fluctuations; and
- Meeting connection site requirements (eg Earth Fault Factor) and setting out equipment specifications at the user interface.

It is essential that the OFTO can demonstrate that its network meets the SQSS and complies with the performance characteristics of CC6.1 in order to provide a consistent quality of service to transmission users. The Plant and Apparatus criteria specified in CC6.2 may be applicable in principle, and will be applicable at the onshore interface point. It should be noted however that the technical specifications applied onshore cannot be directly applied offshore.

Therefore it would seem appropriate to either define a new set of uniform technical specifications for offshore transmission equipment or place an obligation on an OFTO to state:

- Offshore Technical specifications it is working to; and
- Offshore Technical specifications the user needs to work to.

Given that experience of offshore installations is limited, it would seem appropriate for the relevant OFTO to set equipment standards for its network. However, there is merit in ensuring that equipment within the Offshore Network

should, as a minimum, meet IEC Standards with appropriate design measures incorporated for operation within the marine environment.

It should be noted that giving the OFTO freedom to select its own technical specifications does not relieve it of the obligation to design its network to meet uniform performance requirements, but does give it flexibility in how it meets these. These requirements may need to be extended to ensure that adequate voltage transient analysis is performed in designing the offshore network and specifying the equipment required, including the design of insulation coordination.

Current Grid Code drafting for offshore transmission states that NGET can specify the standards which should apply to a user's equipment at the connection point via provisions in the user's Bilateral Agreement. The offshore equivalent of the SHETL and SPT Technical and Design criteria specified in the Planning Code Appendix C has not been drafted at the present time.

There is also a need to specify offshore network capability in respect of the Grid Code subgroup recommendations on reactive power and voltage control. Current drafting proposals place this specification in the STC although the STC itself refers to Grid Code CC6.3 which is where power and voltage control criteria are currently specified for generators.

The requirement for Planning Assumptions as set out in the current STC is likely to be less onerous offshore than for the integrated onshore networks. However, there are likely to be instances where specific technical criteria placed upon users need to be reflected in the construction offer.

In summary, the STC framework needs to ensure that offshore networks are designed and constructed to:

- Comply with the SQSS;
- Meet GB Transmission System performance characteristics;
- Meet technical specifications at the onshore interface (eg the RES if transmission connected in England and Wales);
- Meet agreed technical specifications at the user interface;
- Meet Reactive power and voltage requirements; and
- Connection specific technical criteria.

Therefore, it would seem appropriate to ensure these requirements are met prior to the OFTO network assuming operational service by stipulating timescales for delivery within bilateral agreements and specifying the way in which an OFTO would demonstrate these requirements have been met. The requirements need to be met throughout the life of the offshore network therefore it is important that they are linked to the enduring Transmission Service Capability specification.

## **7. Transmission Service Capability Specification**

The transmission service as provided by any OFTOs allows NGET to meet two key obligations under the CUSC:

- to provide transmission access to users as in paragraphs 2.3 and 2.4;  
and
- to “make available, plan, develop, operate and maintain the GB Transmission System in accordance with the Transmission Licences and the Grid Code” as in paragraph 6.2.

The concept of the Service Capability Specification forms a key part of the current STC arrangements. There are four additional considerations that need to be taken into account when developing the way that transmission service provision will be managed offshore:

- An OFTO is designing, building, commissioning, operating and decommissioning a new section of network rather than expanding on an existing network;
- An individual offshore network is likely to form a discrete radial connection which is:
  - Readily defined in terms of technical capability;
  - Unlikely to offer alternative service provision (ie parallel routes) in the event of equipment problems;
- If the service falls short of minimum design capability, users' access to the transmission system may be restricted or costs may be incurred in maintaining it;
- NGET will have a real time interface with multiple OFTOs.

In order for NGET to provide the user with its contracted connection capability, the OFTO will need to take on the obligation to provide a Transmission Service which can accommodate the users contracted TEC whilst continuing to meet necessary technical, design and operational criteria.

There is therefore a strong argument for building development and delivery of a Service Capability Specification into the design, build and commissioning stage of the offshore network lifecycle, which then persists throughout the life of the offshore network. This would include agreed timescales for the delivery of the specification as well as, as far as is practicable, a uniform method of information exchange between NGET and the OFTO.

NGET's ability to deliver transmission access to users over the life of the offshore network is dependant on the offshore network continuing to be capable of a contracted minimum service capability. As such, the OFTO transmission Service Capability Specification needs to be subject to a fault management process and to change control if any change is permanent. This will allow NGET to manage users' requirements where the transmission service is restricted by specifying the information to be provided by an OFTO in the event of a service reduction as well as forming the basis of any capacity, capability or performance measures. There is also a requirement to reflect control and indication requirements in the capability specification as without these the network's capability may not be safe or economic to use.

These provisions are consistent with current STC drafting in section C and Section D, but represent a further level of detail which could be built into either an STCP or a bilateral agreement between NGET and the respective OFTO.

### **Availability and Performance Criteria**

In order to meet its obligations with respect to Licence Condition C17 (Transmission System Security Standard and Quality of Service), NGET needs to agree availability and performance measures for the offshore network with the OFTO in order to quantify the "availability, security and service quality of the GB transmission system".

These measures should reflect the actual service delivered and hence should be derived from the Transmission Service Capability Specification. There is therefore some logic in including the obligation to agree measures the within bilateral agreement between NGET and the OFTO.

Note it is assumed that network output measures will be developed as part of the OFTO's licence obligations, consistent with the obligations on onshore TOs to develop measures (as specific in Condition B17). Hence no proposals have been developed to place obligations on OFTOs for reporting of asset health, maintenance plans etc within the STC framework.

## 8. TO Revenue

Users will have an obligation under the CUSC to pay connection and use of system charges, which will be set in line with NGET's charging methodologies. NGET has in turn an obligation to develop and maintain its charging methodologies, to give users notice of any changes to their charges and to despatch monthly invoices to recover these charges.

There may be a need to provide for adjustments to OFTO Revenue within the STC depending on the design of OFTO incentives and the performance measures that any incentives are based on.

There is also likely to be a need to allocate OFTO construction costs to locational and non-locational assets (for the purposes of the proposed charging arrangements). As this information is required to set users charges, delivery timescales need to be specified under the respective construction agreement.

Subject to the level of detail and complexity required, these provisions would be best placed within the STC itself in Section E (Payments and Billing).

## 9. Placement of Provisions within the STC Framework

The provisions in the STC relating to offshore transmission could be specified in three different places:

- The STC (The Code Itself);
- The Code Procedures (STCPs); or
- A Bilateral Agreement (currently the only example of this is the TO Construction Agreement).

Given that many of the provisions outlined above are consistent with but more detailed than the current STC, it would seem appropriate that these are defined either in:

- New, Offshore Specific, STCPs or
- A Bilateral Agreement between NGET and the OFTO.

Where provisions are generic to all OFTOs (eg the form of a Service Capability Specification) then there is logic in defining these within offshore transmission specific STCPs. In common with existing STCPs, these would fall under STC governance arrangements and form part of the STC as specified in STC Section A.

Where provisions or parameters are specific to an offshore development, these would naturally fall under a bilateral agreement. In line with the discussion above, such an agreement would include:

- Information equivalent to a current TO Construction Agreement;
- Any necessary additional provisions relating to the tender process (eg design change control); and
- Specific timescales for delivery against the generic obligations needed to define the enduring transmission service.

For example, the agreement would set out when Service Capability Specification would be delivered, whilst an STCP could set out how and in what form it should be delivered. This approach would ensure that the specific details of the enduring transmission service would be defined at appropriate points in the design and build programme. For the avoidance of doubt, this proposal does not envisage that a full Service Capability Specification would be developed as part of the OFTO selection process but that it would be finalised at an appropriate point prior to the OFTO's equipment entering operational service.

One possible exception to this approach is in the area of Payments and Billing where any OFTO Revenue provisions could be included within the STC itself, subject to complexity.

## **10. STC Provisions Applicable Onshore and Offshore**

A number of existing STC provisions should apply to both onshore and offshore transmission subject to the redrafting required to accommodate relevant offshore terms. These include:

- Governance;
- Outage Planning;
- Investment Planning (In part);
- Communications and Data;
- The majority of General Provisions; and
- Dispute Resolution.