

Introduction of charging arrangements associated with Offshore Transmission Networks

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Overview:

National Grid Electricity Transmission plc has proposed a modification to its use of system charging methodology.

The proposed modification relates to the introduction of charging arrangements to recover the costs of transmission infrastructure assets required to facilitate the connection from a generating site located in offshore waters to the onshore network. The proposed methodology is based on the existing onshore arrangements.

The Authority is required to assess proposed modifications to the use of system charging methodology and to decide whether or not to veto any proposal. Under Section 5A of the Utilities Act 2000 the Authority is required to carry out an impact assessment where it considers a proposal is important. On 9 January 2009, we published a letter confirming that it was our intention to undertake an impact assessment before making a decision on this proposal. This document sets out that impact assessment and consultation on the proposed modification.

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Context

Under the powers conferred by the Energy Act 2004, the Government has been developing its policy to establish a regulatory regime for offshore transmission. It has concluded that a non-exclusive, price-controlled approach was the most appropriate licensing and regulating model and that the current transmission licence and industry code arrangements, wherever possible, should be extended to offshore. National Grid Electricity Transmission plc (NGET) has been appointed as the GBSO offshore designate.

Standard condition C5 of NGET's electricity transmission licence requires it to keep its use of system charging methodology under review at all times. NGET is also required to make proposals to modify that methodology where it considers a modification would better achieve the relevant objectives: (a) in relation to competition, (b) in relation to cost-reflectivity and (c) taking account of developments in its transmission business. NGET has proposed a modification to incorporate offshore electricity transmission charging arrangements as part of an integrated regime following the commencement of the forthcoming regulatory regime for offshore transmission.

NGET considers the modification facilitates competition by ensuring onshore and offshore generation compete within consistent charging arrangements, provides cost reflective signals for the charging of transmission assets which are local to offshore generation connections, and takes account of developments by providing charging arrangements for the introduction of the regulated offshore transmission network. NGET's Conclusions Report for this proposal was submitted on 30 December 2008 to the Gas and Electricity Markets Authority (the 'Authority')¹ for a decision.

Associated Documents

- Charging arrangements associated with the Offshore Transmission Networks: Pre-consultation, July 2007, Consultation, December 2007 and Further Consultation Document, October 2008.
<http://www.nationalgrid.com/uk/Electricity/Charges/modifications/uscmc/>
- Ofgem letter to NGET on the development of offshore transmission charging arrangements, 30 May 2008.
<http://www.nationalgrid.com/NR/rdonlyres/08880813-81D6-45B9-8867-9DB13951FA42/26376/3052008LettertoHeddRobertsFINAL.pdf>
- Conclusions Report to the Authority, December 2008.
http://www.nationalgrid.com/NR/rdonlyres/BB54C616-52B7-4DBC-80D4-41BCEAADCE9E/30891/GBECM8ConcReport_final.pdf

¹ Ofgem is the office of the Authority. The terms 'Ofgem' and 'the Authority' are used interchangeably in this document.

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Summary

On 30 December 2008 National Grid Electricity Transmission plc (NGET) submitted Use of System Methodology modification proposal GB ECM-08 to the Authority for a decision.

The proposed modification relates to the introduction of charging arrangements to recover the costs of transmission infrastructure assets required to facilitate the connection from a generating site located in offshore waters to the onshore network. The proposed modification is intended, subject to the Authority's decision, to be effective only following the commencement of the forthcoming regulatory regime for offshore transmission².

NGET explained that the proposed charging arrangements for use of the licensed offshore transmission network assets are, so far as practical, based on the same broad principles of the current Transmission Network Use of System (TNUoS) charging methodology, including the effect of the recently approved modification, GB ECM-11³. This would treat the offshore transmission infrastructure assets as 'local' to the connection of the offshore generators and hence will recover the relevant costs via the local substation and local circuit elements of the TNUoS charges. NGET believes that the proposal, if implemented, would provide:

- a cost-reflective charging signal that will accurately reflect the costs of 'local' offshore transmission infrastructure costs resulting from individual generators' choice of the design and location of their offshore connection,
- allow onshore and offshore generation to compete within consistent 'local' transmission infrastructure charging arrangements; and
- enable offshore generators to make more efficient decisions on the location and design of their connection by signalling the costs of location and design.

NGET has presented two competing implementation alternatives in its Conclusions Report (the 'Report'). These two options are substantively the same except for the way that NGET proposes to recover the charges levied by a Distribution Network Operator (DNO) for the connection and the use of its network when an offshore transmission network connects onshore directly to a distribution network instead of a transmission network:

- **Option 1** includes the principle of introducing an embedded transmission charge within the TNUoS charging methodology. This option will use the established TNUoS charging methodology governance process and would only require an addition in the pass-through elements in its revenue restriction licence condition.
- **Option 2** has not been fully worked-up by NGET in the Report. The Report indicates that it would exclude the embedded transmission charge element of the proposals from the TNUoS charges. NGET has subsequently explained this option

² The offshore transmission network will not come into existence until the commencement of sections 89 and 180 of the Energy Act 2004, i.e. the 'Go-live' date (June 2010) from which point unlicensed participation in the transmission of electricity offshore at voltages of 132kV and above would be a prohibited activity.

³<http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/Charging/Documents1/151208%20ECM-11%20decision%20letter.pdf>

may require a further, separate NGET consultation process to establish a new, separate charging methodology and associated governance process.

Our initial view is that option 1 is the preferred way forward because, in comparison to option 2, option 1 has the benefit of avoiding regulatory burden in implementation, and would be simpler to implement. The simplicity of the charging arrangements proposed, sufficiently outweighs the potential need to deal with proposals to introduce socialisation of the embedded transmission charges.

The Authority's minded-to position is a preliminary view only.

Purpose of this document

Ofgem considers that modification proposal GB ECM-08 meets the "importance criteria" set out in section 5A of the Utilities Act and is therefore carrying out an assessment of the likely impact of implementing the proposal. We published a letter on 9 January 2009 confirming our intention to undertake an impact assessment before making a decision on this proposal. The purpose of this document is to set out our initial view of the impact of the proposed modification and to provide an opportunity for parties to comment on those impacts.

Way forward

In line with our published guidance on impact assessments, this document provides six weeks for respondents to submit any comments. The Authority will take responses, and any other relevant information, into account in making its decision as to whether or not to veto the proposal. We are currently planning to make that decision by 30 March 2009.

If the Authority's decision is not to veto the proposal, NGET is seeking to implement the modification proposal following the commencement of the regulatory regime for offshore transmission to allow the charging arrangements to be reflected in the 2010/11 charging year.

1. Introduction

Chapter Summary

This chapter provides a brief summary of the background to this document, including the development of the regulatory regime for offshore transmission, the current arrangements for generators connecting to and using the electricity transmission system and the process leading to this document.

Development of the regulatory regime for offshore transmission

Licensing and regulatory regime for offshore transmission

1.1. The Energy Act 2004 provided the Secretary of State with powers to extend the prohibitions of the Electricity Act 1989 into offshore waters (territorial seas and the Renewable Energy Zone) and to establish a regulatory regime for offshore transmission and distribution.

1.2. In July 2005, Ofgem and DTI (now DECC) jointly consulted on the way that offshore transmission networks should be licensed. In accordance with the Government decision in March 2006, transmission licensees operating offshore must be price-controlled. In March 2007, the Secretary of State announced that he considered that the non-exclusive approach (with parties free to compete for transmission licences and the right to build, own and operate offshore transmission systems) was the most appropriate model for licensing and regulating the new transmission systems needed to connect offshore generators.

1.3. Concurrent with the Government's process to implement relevant sections of the Energy Act 2004, Ofgem has been working with the Government to develop the regulatory policy framework. Previous offshore policy documents have set out the general approach for the provision of an offshore grid and the development of offshore electricity transmission charging arrangements:

- An offshore generator will seek a grid connection offer from the GB System Operator (GBSO) for an offshore connection point.
- The infrastructure assets required to facilitate the connection from the generating site to the onshore network will be provided by an independent Offshore Transmission Owner (OFTO).
- Offshore generators will pay for the use of offshore and onshore transmission infrastructure assets through an integrated transmission charging regime determined by NGET as the GBSO.
- National Grid Electricity Transmission plc (NGET), as designate offshore system operator for GB, should consider the detailed changes required to apply the charging methodologies offshore, the timescales for implementing these, and the consequential changes to the onshore arrangements.
- Unless significant new information emerges, the same broad principles of the current GB Transmission Network Use of System (TNUoS) charging methodology should apply to both onshore and offshore transmission systems.

- NGET as the GBSO, rather than the OFTO or offshore generator, will be able to contract with a Distribution Network Operator (DNO) for connection of an offshore transmission system to a distribution system and be responsible for paying the charges for the connection to and the use of the distribution network (if option is requested by offshore generator).

1.4. In seeking to extend the onshore transmission charging arrangements to offshore, we note the following differences between offshore and onshore transmission:

- Compared with onshore, offshore connections have a higher capital cost (associated with the higher cost of assets suitable for use in an offshore environment and offshore installation costs); and
- Compared to onshore, there is a wider variation in the size, cost and design of individual projects.

The competitive tender process

1.5. A key feature of the regime being developed is that the permission to develop each new tranche of transmission assets required by offshore generators (i.e. the transmission licence) will be awarded through a competitive tender process. The Government and Ofgem consider that allowing companies to compete for the right to design, finance, build, maintain and operate this transmission infrastructure should lead to the most economic and efficient solution for both consumers and generators. It is therefore important that 'fit for purpose' offshore networks are developed efficiently to ensure consumers and generators do not face unnecessarily high charges and that connections are provided at the lowest possible cost through technical innovation.

1.6. The offshore regulatory regime is structured to provide an appropriate balance between obligations and incentives, whilst providing sufficient certainty to encourage prospective OFTOs to enter the market. Further, there are benefits from being able to provide greater certainty about the level of indicative costs that result from the charging methodology that NGET is developing – this will help to inform views on the financial exposure and financing options available to OFTOs and generators. It was therefore considered desirable that NGET should submit proposals to introduce offshore charging arrangements as soon as practicable in order to provide greater clarity on the charges offshore users will face and on the competitive tender bidding process (although it is important to note that it is not until offshore costs are revealed through the tender process that charging accuracy can be achieved).

Treatment of embedded transmission

1.7. Currently, 132kV connections between an offshore generator and an onshore distribution system are classed as low voltage lines. The Government introduced a class exemption that is applicable to this type of offshore distribution system in April 2007. To date, onshore distribution licensees have treated offshore generators seeking connections to the onshore distribution system as distributed generator connections.

1.8. When the new offshore transmission arrangements are introduced, 132kV circuits between offshore generators and onshore distribution systems will be classed as high voltage lines, requiring the owner to hold a transmission licence. One consequence of this change will be to introduce a new type of distribution system connection ('embedded transmission connection') and the possibility of offshore electricity transmission networks seeking connection to the onshore transmission network via onshore distribution systems.

1.9. Distribution charging arrangements are the subject of a separate review. Change proposals are being developed by the DNOs and will be considered separately by Ofgem. We expect that embedded transmission connections would be treated similarly to large distributed generator connections under current arrangements and any revised distribution charging arrangements. Given the proposal that the GBSO may contract with the DNO and be responsible for paying the charges for connection of an offshore transmission system to the distribution network and the use made of the distribution network, new arrangements need to be established for NGET to recover such DNO charges from its relevant users of the GB transmission system.

Overview of the existing arrangements for electricity transmission charges

1.10. There is a single electricity licence relating to the GB transmission system that covers both System Operator (SO) activities and Transmission Owner (TO) activities. There are currently three transmission licensees each of which is permitted to develop, operate and maintain a transmission system within a distinct transmission area⁴. Only one licensee (NGET) is permitted to carry out SO activities. The SO function, coordinating and directing flows onto and over the GB transmission system, is carried out for the whole GB by NGET.

1.11. The provision of network services is linked to providing transmission capability at different locations and is facilitated by the TOs building, operating and maintaining their transmission assets. The allowed costs associated with providing this capability are set by Ofgem as part of the price control process and are recovered by NGET as SO, via contracts with users for connection to and use of the GB transmission system.

1.12. The charges levied by the SO on users to recover the TOs' costs (in providing networks services to the SO) consist of two parts: Connection charges and TNUoS charges. The boundary between Connection and TNUoS charges is set by the principle of "single user connection assets". Connection assets are defined as those assets solely required to connect an individual user to the GB transmission system, which are not and would not normally be used by any other connected party. The costs of providing and operating these assets, including a reasonable rate of return on capital employed, are recovered directly from the generator via Connection charges.

⁴ Each licence contains special conditions that limit the area in which the licensee is authorised to carry out TO activities to a defined area within GB. NGET's transmission area is England and Wales, Scottish Power Transmission Limited's transmission area is the south of Scotland, and Scottish Hydro Electric Transmission Limited area is the north of Scotland.

1.13. All other transmission assets which are shared, or could be potentially shared, by more than one user are defined as transmission infrastructure assets. The costs incurred by the TOs in building, owning and maintaining these assets are recovered from all users of the GB transmission system via TNUoS charges. A generator's TNUoS charges are based on its Transmission Entry Capacity (TEC), which represents the maximum contractual amount of power that the generator can flow onto the transmission system at a specified location.

1.14. After the decision by the Authority not to veto GB ECM-11 on 15 December 2008⁵, the TNUoS charges will include the following four components:

- **'Local' circuit charge.** This component relates to the cost of transmission infrastructure assets used by generators to connect to the Main Interconnected Transmission System (MITS). This charge is derived with reference to the incremental power flows along "local" transmission infrastructure circuit assets between the generation node and the next MITS substation, together with unit costs for relevant design and type of circuit for each generation connection.
- **'Local' substation charge.** This charge relates to the unit costs of relevant design and type of local infrastructure substation assets which are required for each generation connection.
- **'Wider' locational charge.** This charge component will be calculated on the basis of zonal averaging approaches and the generic cost base for carrying unit power over unit distance.
- **Residual charge.** A residual non-locational element that ensures that the total income from TNUoS charges recover the relevant allowed revenue for the TOs. It allows the recovery of the efficient costs that cannot be attributed to the use of the network at particular locations.

Process to date

1.15. In December 2007⁶, NGET published a consultation on proposals to modify the use of system charging methodology to facilitate the inclusion of licensed offshore transmission networks and related charging arrangements to recover the costs of transmission infrastructure assets required to facilitate the connection from a generating site located in offshore waters to the onshore network.

1.16. These proposals were developed by NGET on the basis of an agreed general approach to the development of offshore transmission charging arrangements established in previous offshore documents that unless significant new information emerges, the same broad principles should apply to the regulation of both onshore and offshore transmission.

1.17. In the consultation process for the offshore charging proposals, NGET highlighted two significant issues:

⁵<http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/Charging/Documents1/151208%20ECM-11%20decision%20letter.pdf>

⁶ Modification proposal GB ECM-08 "Modification proposal to the Transmission Network Sue of System charging methodology to introduce charging arrangements associated with offshore transmission networks." December 2007.

- An additional process will be required to determine the split of revenues between the locational and residual elements of the TNUoS charge, most likely to be determined as part of the tender; and
- Consideration of the potential incentive that could exist for an OFTO to allocate locational costs to the non-locational element and whether this would be adequately addressed as part of the tender process.

1.18. On 30 May 2008 Ofgem wrote to NGET⁷ highlighting our concerns with NGET's proposals set out in its December 2007 consultation, including the assumptions about the information to be collected as part of the offshore transmission tender process and the definition of and justification for the split between locational and residual charging elements. The letter requested that NGET undertake further analysis and initiate a supplementary consultative process with industry to address the above concerns.

1.19. NGET published a supplementary consultation in October 2008⁸ detailing its revised proposals for the introduction of charging arrangements associated with offshore transmission networks. After considering the responses received to that consultation, NGET submitted its final proposals on 30 December 2008 to the Authority for decision.

1.20. On 9 January 2009 we published an open letter setting out our intention to undertake an impact assessment on NGET's proposed modification with a view to making a decision on NGET's proposal by 30 March 2009 in accordance with the requirements of licence condition C5(4) which obliges the Authority to issue its decision within 3 months of receipt.

Structure of the document

1.21. The remainder of the document is structured as follows:

- Chapter 2 sets out a brief description of NGET's proposed modification to the use of system charging methodology.
- Chapter 3 provides an assessment of the impact of the proposal in relation to the relevant objectives.
- Chapter 4 provides an assessment of the proposal in relation to the Authority's wider duties, including those associated with the environment.
- Chapter 5 sets out the way forward and the Authority's minded-to position in respect of the two implementation options set out by NGET in its Report.

1.22. A description of the legal framework against which this modification is assessed is set out in appendix 3.

7 Available from NGET's website. <http://www.nationalgrid.com/NR/rdonlyres/08880813-81D6-45B9-8867-9DB13951FA42/26376/3052008LettertoHeddRobertsFINAL.pdf>

8 Available from NGET's website: <http://www.nationalgrid.com/NR/rdonlyres/EDF97DC1-2A07-407B-80B1-DA1E9C171546/29207/GBECM08OffshoreChargingFurtherConsultation.pdf>

2. Outline of NGET's modification proposal

Chapter Summary

This chapter briefly summarises NGET's proposed modification to the use of system charging methodology, in terms of the key features and specific areas that new arrangements have been developed in comparison to onshore arrangements.

→ **Question:** There are no questions in this chapter.

Key features of the modification proposal

2.1. NGET's proposed modification relates to the introduction of charging arrangements to recover the costs of transmission infrastructure assets required to facilitate the connection from a generating site located in offshore waters to the onshore network.

2.2. In line with the established policy approach - that onshore arrangements should, as far as practical, extend to offshore - NGET's proposed charging methodology for offshore transmission adopts the same broad principles underpinning the onshore charging methodologies. However, there are some variations in detailed application in such principles.

2.3. The key features of NGET's proposals are:

- The boundary between Connection and TNUoS charges will continue to be set by the principle of "single user connection assets". The proposal is that this will be at the offshore substation LV busbar;
- The TNUoS charges for both onshore and offshore generators are levied on the basis of their TEC and both the offshore and onshore TNUoS tariffs are structured to include four elements: local circuit, local substation, wider locational and residual tariffs (as provided under GB ECM-11, see above)
- Following the same definition as onshore, the offshore transmission will be categorised as infrastructure local to the connection of the offshore generation, and hence the relevant costs recovered from local substation and local circuit elements of the TNUoS charges;
- The derivation of the local circuit tariff will be derived as the product of the following (again with some specific details introduced for offshore transmission with regard to local circuit expansion factor and local security factor):
 - the incremental power flows along the local circuits;
 - the relevant local circuit expansion factor representing the ratio between the unit cost applicable to the local circuit and the system-wide expansion constant;
 - the relevant local security factor representing the level of asset redundancy comparing to the maximum flow on the local circuits; and
 - a single system-wide expansion constant (based on 400kV overhead line).
- The local substation tariff for both onshore and offshore reflects the costs for the relevant design and type of the local substation. However, specific details are introduced in the proposals for calculating offshore local substation tariff;

- The wider locational and residual tariffs by the existing calculation method. When the offshore transmission regime comes into existence there will be a revision to the existing onshore generation zones to reflect the inclusion of offshore generation in the transport model; and
- A continuation in the current split of revenue recovery between generation and demand (of 27% from generation and 73% from demand).

2.4. As explained in Chapter 1, in the case of offshore transmission connecting directly to an onshore distribution network, the GBSO will contract with the relevant DNO and be responsible for paying the distribution charges. Therefore, in addition to the above key features, NGET's proposal also included two competing options for recovering such costs from the relevant offshore generators. These options are discussed below.

Specific features introduced for offshore transmission

2.5. This section describes in more detail the specific details introduced for offshore transmission. The discussion contrasts this with the onshore arrangements, where applicable. Five features of the regime are discussed:

- Local circuit expansion factors;
- Local circuit security factors;
- Local substation tariffs;
- Generation zoning; and
- Treatment of distribution costs for embedded transmission connections.

Local circuit expansion factors

2.6. Onshore, local circuit expansion factors are set for a number of circuit types with different capacities and different numbers of circuit per route. Within each circuit type, the expansion factor is derived from the average costs of all feasible future connections across GB.

2.7. Offshore, NGET proposes that there will be OFTO-specific circuit expansion factors for each specific project. This will be derived from the OFTO's annual permitted revenue (determined from its successful tender bid) divided by the product of the capability and length of the infrastructure assets installed. In addition to adopting a project-specific approach, the proposed derivation of the offshore local circuit expansion factor includes two further specific elements which are absent in the onshore calculation:

- **The costs of OFTO providing reactive compensation.** Under the Grid Code CC 6.3.2, onshore generators are required to install, and meet the costs of, reactive compensation equipment at the Grid Entry Point. Offshore, the current proposal is that reactive compensation should be provided by the OFTO. NGET proposes that the costs associated with this OFTO-provided reactive compensation should be met by the offshore generators connecting to that OFTO. If this is the approach which is ultimately adopted, the relevant costs would be included in its revenue stream. Thus, it is proposed that such costs are recovered from the offshore generators by including the costs in the

specific local circuit expansion factor. As an example, if the OFTO has built more reactive capacity than is required, the proposed approach would apportion the required amount to the offshore generators via the expansion factor and recover the rest from the residual tariff.

- **The converter station costs of HVDC connections.** HVDC links differ from an AC equivalent in that as well as generic substation assets there is an additional converter station at each circuit end. In choosing HVDC over AC technology, the additional costs of the converters are traded off with the reduced cost per km for the cable. NGET's charging proposal treats converter stations as part of the HVDC link, including the costs of converter stations in specific local circuit expansion factors.

2.8. In the event that the offshore connection is not commissioned precisely on 1 April 2010 (the beginning of the charging year in which the offshore regime 'goes live'), NGET proposes to adopt an alternative calculation method in the first year of the offshore transmission regime. A separate expansion factor will be calculated for the first year using the part year value of revenues. The offshore generator would, as onshore, pay charges from the time of connection, but these would recover the correct, lower revenue requirement for that year.

Local circuit security factors

2.9. Onshore, the local circuit security factor takes the value of either 1.0 (for connections with no redundancy, i.e. using single circuit connections); or 1.8 - the security factor used in the wider locational tariff, for any other types of connection.

2.10. NGET's proposal for offshore is that specific local circuit security factors would be calculated for each offshore connection, aligned with the actual level of redundancy of each individual connection. In the event that the connection is via a single cable, the local circuit security factor would be 1.0. For multiple cable connections, NGET propose that the local circuit security factor would be calculated as the ratio between cable capability and the generation capacity connected to them, capped at the wider system security factor (currently 1.8). The local circuit security factor would be recalculated in the event of the connection of additional generation or the building of additional offshore circuits.

Local substation tariffs

2.11. Onshore, a set of 9 substation tariffs have been derived from an analysis of average generic costs. This analysis is based on three categories of cost factor; (i) voltage⁹, (ii) the sum of TEC at the substation¹⁰, and (iii) redundancy of transmission assets¹¹.

⁹ The voltage of the first substation at the boundary between the user's connection assets and the transmission system; 400kV, 275kV or 132kV and below.

¹⁰ The combined TEC of all generation at the connecting substation. Less than 1320MW or greater than 1320MW.

¹¹ A single busbar/single switch mesh connection or a redundancy connection which includes a double busbar substation design; single circuit or redundancy connection.

2.12. Offshore, NGET proposes that the substation tariff should be the sum of separate £/kW components calculated for transformers, switchgear and the offshore Platform. These separate £/kW components will be calculated by dividing the relevant asset revenue by the relevant asset capability. For offshore platforms, the capability would be the higher of the capability of the transformers and switchgear.

2.13. The costs of civil engineering works associated with building the foundations for onshore electrical infrastructure assets at local substations are not included in the local substation tariffs, but recovered from the residual tariff instead. To ensure an even-handed treatment NGET's proposal reduces the offshore local substation tariff by an amount equivalent to the average cost of civil engineering costs for onshore substations. This is calculated as £0.35/kW.

Generation zoning

2.14. As a result of the work done in the development of GB ECM-11, NGET proposes that nodes with a similar marginal cost are grouped in a zone. This means that an offshore generator will be in the same 'wider' TNUoS generation zone as the first onshore MITS substation to which it connects.

Treatment of embedded transmission

2.15. NGET presented two competing implementation alternatives in its Report. These two options are substantively the same, except for the way that NGET proposes to recover the charges levied by a DNO for the connection and the use of its network by an embedded offshore transmission connection:

- **Option 1** includes the principle of introducing an embedded transmission charge within the TNUoS charging methodology. This option will use the established TNUoS charging methodology governance process and would only require technical changes in the treatment of the pass-through elements in its revenue restriction licence condition.
- **Option 2** has not been fully worked-up by NGET in the Report. The only description contained in the Report was that it would exclude the embedded transmission charge element of the proposals from the TNUoS charges. NGET has subsequently explained that this option will potentially require a further, separate NGET consultation process to establish a new, separate charging methodology and associated governance process.

Implementation date

2.16. Subject to the Authority not vetoing one of the options under the proposal, NGET will implement one of the options. In advance of the enactment of the relevant sections of the Energy Act 2004, the charging modification would have no practical effect as there would be no licensed offshore transmission systems until the offshore regime reaches "go live". As a result, the methodology will not become relevant until the offshore regime "goes live" (June 2010). This would allow the proposal to be reflected in charges for the TNUoS charging year 2010/11.

3. Assessment of impacts in relation to the relevant objectives.

Chapter Summary

This chapter sets out an assessment of the impact of the modification proposal in relation to the relevant objectives of NGET's electricity transmission licence. In other words, it considers the relevant impacts in terms of cost reflectivity, competition and reflecting developments in the transmission business.

Question box:

Question 1. Do respondents wish to present any additional quantitative analysis that they consider relevant to assessing the proposal?

Question 2. Do respondents consider that there are any aspects of the proposal that have not been fully assessed?

Question 3. Do respondents consider that the key features of the proposal strike an appropriate balance between cost-reflectivity, transparency and stability?

Question 4. We welcome further views on NGET's proposals concerning specific expansion factors and security factors and substation tariffs, including whether the differences between the onshore and offshore arrangements are justified by materiality in costs and practicality.

Question 5. Do respondents consider that this modification promotes more effective competition by targeting offshore transmission costs at offshore generators?

Impact in relation to relevant objectives

3.1. Ofgem assesses proposed modifications against the relevant objectives as set out in standard condition C5 of NGET's transmission licence which relate to the Use of System Charging Methodology (as described in appendix 3). An assessment of the impact of the proposal in light of each of these objectives is provided in this chapter. Where relevant, the assessment draws on views expressed by interested parties in response to NGET's consultations to date.

3.2. NGET's proposed modification introduces TNUoS charging arrangements for offshore transmission. As described in Chapter 2, the proposed offshore charging arrangements adopt the same broad principles which are currently applied onshore, but contain some specific detailed approaches in a number of areas:

- Local circuit expansion factors;
- Local circuit security factors;
- Local substation tariffs;
- Generation zoning; and
- Treatment of distribution costs for embedded transmission connections.

3.3. Our assessment, whilst covering the whole package of the proposal, pays particular attention to whether any new or different approaches proposed for offshore better facilitates the relevant objectives. In doing so, we take note of the physical differences between onshore and offshore transmission, in that the latter

tends to have higher capital costs and wider variation in size, cost and design amongst individual projects.

Cost reflectivity

3.4. NGET's proposal extends the onshore TNUoS tariff structure to offshore. It defines the offshore transmission infrastructure assets as 'local' to the connection of the offshore generators, and recovers the costs via a local substation tariff and a local circuit tariff. We consider that, in common with the onshore charging regime, such a charging structure has the merit of providing a cost-reflective signal at a local level.

3.5. Detailed aspects of NGET's proposal that impact on the cost reflectivity of transmission charges include the derivation of the local circuit expansion factors, local circuit security factors and local substation tariffs. These are assessed below.

Local circuit expansion factors

3.6. The key differences between the local circuit expansion factors onshore and that proposed for offshore are that the offshore expansion factors:

- are project-specific offshore whereas they are based on averages for a number of circuit types onshore;
- include the OFTO's costs of providing reactive capability at the Grid Entry Point whereas, as discussed in chapter 2, generators provide this capability themselves onshore; and
- includes converter station costs for HVDC links.

3.7. We understand that the above differences reflect the magnitude and variability of capital costs and in the nature of projects. These differences are discussed in more detail below.

3.8. We note that at an early stage in its consultation process, NGET also considered the adoption of generic offshore expansion factors. However, there were perceived problems with this approach. Specifically, there was insufficient historic offshore asset cost information to robustly determine appropriate generic expansion factors. It was also considered that, given the wider variability of high costs from project to project, averaging them into generic expansion factors could inappropriately dilute the cost reflectivity of the resulting offshore tariff. The final proposal is to calculate the local circuit expansion factor based on asset capability and OFTO revenue. Our initial view is that deriving the offshore local circuit expansion factors using actual cost data is an appropriate way of achieving cost-reflective local circuit tariff.

3.9. We note NGET's explanation that the OFTO's costs for providing reactive compensation are a direct replacement of what would be incurred by the offshore generators to provide the reactive capability themselves. As such, we consider that it is cost-reflective to target the costs on those users that cause and benefit from them. Including the costs in calculating the local circuit expansion factor would appear to be an appropriate approach of achieving this. We would welcome parties' views on whether the proposal to incorporate the costs of OFTO-provided reactive

compensation in the specific expansion factors is appropriate from a cost-reflectivity perspective.

3.10. We note NGET's explanation that the converter station costs are an integral part of the costs of the link. Including the converter station costs in the local circuit tariff (as opposed to being included in the local substation tariff, or residual tariff) would appear to allow decisions about the choice between DC and AC technology to take account of all relevant costs. We therefore consider that NGET's proposal is an appropriate way of achieving cost-reflective changes. Again, we would welcome views on this aspect of NGET's proposal.

3.11. We note that the majority of respondents that expressed an opinion on the utilisation of specific expansion factors derived from OFTO revenue supported their use. Three respondents also supported NGET's justification that there is a lack of historical data and one recognised that costs may also materially vary between projects. Also, we note the views of one respondent to NGET's October 2008 consultation who stated that the use of generic expansion factors would be a move away from cost reflectivity and increase uncertainty in investment appraisal. We welcome further views on this.

Local circuit security factors

3.12. As discussed above, onshore local circuit security factors can only take one of two possible values (1.0 for connection with no redundancy and the GB average for the rest). NGET is proposing that security factors offshore should take the exact level of redundancy subject to a cap (currently 1.8).

3.13. We note that by using a project-specific approach offshore, NGET aims to take account of the fact that the majority of offshore transmission connections are likely to be via circuits which do not provide similar levels of connection security as onshore. Most offshore connections will be through single circuits or circuits with partial redundancy relative to the amount of generation connected to them. On the whole, these types of connection do not use equivalent amounts of assets to the transmission systems onshore. Given that the offshore transmission links have higher capital costs than onshore, differences in the security factor can have more material impact on the charges.

3.14. We consider that this element of NGET's proposals represents a practical approach to reflect accurately the costs associated with the level of asset redundancy in an offshore connection. We would however welcome further views on NGET's proposals concerning specific security factors, including whether the differences between the onshore and offshore arrangements are justified by materiality in costs and practicality.

Local substation tariff

3.15. NGET's proposals differentiate the way in which the local substation tariff is derived onshore and offshore. Specifically:

- the offshore tariff is project-specific, whereas the onshore tariff is based on the average for a number of substation types;
- civil engineering costs are included in the offshore tariff, whereas they are excluded from the onshore tariff and recovered from residual tariff instead; and
- The offshore tariff is reduced by an amount equal to the average onshore substation civil engineering costs.

3.16. We note that similar to the calculation of local circuit expansion factors, NGET's proposal for a project-specific approach offshore, as opposed to an averaging approach onshore, reflects the more widely variable range of higher costs offshore. We also note that there would be difficulty in pursuing the generic costs approach offshore due to the lack of sufficient historical cost data. We therefore consider that the proposed project-specific approach for deriving local substation tariff is an appropriate way of achieving cost-reflective charges.

3.17. We note NGET's explanation that, whilst the variation amongst the civil engineering costs for onshore substations is not too great for an average treatment; platforms for offshore substations are significantly more costly than the equivalent onshore asset. NGET's proposal aims to avoid inappropriate averaging of significantly different costs. At the same time, the proposed reduction by the amount equivalent to the average onshore substation civil costs ensures that only the incremental between the offshore and onshore costs are included in the offshore local substation tariff, hence avoiding the double charging of the onshore costs to the offshore generators. We further note that NGET's proposed initial value of the reduction, £0.35/kW, was derived from the analysis of a number of recent connections.

3.18. We consider that the proposed treatment of the civil engineering costs in the local substations represents a balanced approach to achieve cost-reflectivity in the local substation tariff. However, on the specific level of local substation discount, £0.35/kW, we will require more detail on the method of calculation to satisfy ourselves that this is derived in a transparent and cost-reflective manner. We would welcome respondents' thoughts on this, and specifically NGET.

Respondents' concerns on cost reflectivity

3.19. A concern raised by a number of respondents with an interest in offshore development projects is that the targeting of incremental local substation and circuit costs on generators will have a detrimental impact on the development of offshore generation. These respondents felt the proposals would undermine support for the new regime (because costs are not socialised), negatively affect the economics of offshore wind and cause uncertainty for investors. Some of the respondents were specifically concerned by the fact that October 2008 NGET's proposals appeared more cost-reflective than the proposals set out in NGET's December 2007 consultation.

3.20. In developing this impact assessment we sought further clarification from NGET on the approach used in the derivation of the locational element of the offshore TNUoS charge, and the movement from the approach in December 2007. NGET has submitted additional information on the relative financial significance of this change.

3.21. The worked example in appendix 2 of the Further Consultation published in October 2008 illustrated the impact of the targeting of offshore platform and substation asset costs, rather than their socialisation, for the following assumed asset values and parameters:

- A hypothetical 300MW generator, 40km from the point of onshore connection.
- An offshore connection using two 500mm² 132kV cables, each rated at 169MVA. At £420k per km per cable, the total cost of the offshore cable would be £33.6m.
- The connection would further use two 33/132kV transformers with 3 windings rated at 90/90/180MVA, at a cost of £9m (at £25/kVA). The associated switchgear has a cost of £1.3m, rated at 475MVA. The platform on which the offshore substation was located would cost £12.2m (£5m plus £20/kVA). This would give a total cost of the offshore substation of £22.5m.
- Reactive compensation equipment costs of £3.2m.
- The 2008/9 model was used and therefore an expansion constant of 10.289 was applied both on and offshore. The local circuit security factor is 1.13.
- One offshore project has connected only.
- The wider tariff is assumed to be constant for all levels of socialisation.¹²

3.22. NGET has recently submitted additional information which illustrates the affect upon TNUoS tariffs of applying different degrees of targeting of offshore locational and non-locational costs based on the above illustrative example. This information (based on the 2008/9 charging model) is replicated in the table below.

					GB ECM-08	Substation assets socialised
Strategic area	TNUoS zone	Wider offshore tariff (£/kW)	Local circuit tariff (£/kW)	Local substation tariff (£/kW)	TNUoS charge (local + wider + sub) £/kW	TNUoS charge (local + wider) £/kW
North West	11	6.41	13.02	5.44	24.87	19.43
Greater Wash	13	4.11	13.02	5.44	22.57	17.13
Thames Estuary	17	0.99	13.02	5.44	19.45	14.01

3.23. The illustrative substation tariff in the table above is derived from the annuitized total capital cost of each substation asset component divided by the asset capability. In the above example, the offshore substation charge component of £2.67/kW is derived from the annuitized transformer cost is £963k (based on an annuity factor of 10.7%) divided by the asset capability (360MVar). The sum of each asset component value is reflected in the substation tariff value of £5.44/kW of the offshore substation for the example used. The annual substation charge for the hypothetical 300MW offshore generator would therefore equate to £1.6m per annum.

¹² This assumption is made for this illustrative example. Offshore generators would be exposed to movements in the wider locational and residual tariffs.

3.24. We would welcome views on the cost assumptions that NGET has used to determine the local circuit charge and local substation tariff; in particular whether they are representative of the indicative costs that transmission licensees and developers are incurring in developing transmission networks.

Competition

3.25. NGET's charging methodology is required to facilitate effective competition in the generation and supply of electricity. In broad terms, the proposals could impact on competition by:

- Extending consistent cost-reflective charging arrangements to offshore transmission, impacting on the basis upon which onshore and offshore generation compete with each other;
- Impacting on the costs of entry for a particular class of new entrant seeking to enter the GB market, namely offshore generation; and
- Impacting on the complexity and transparency of the commercial arrangements to connect to and use the Transmission System.

Each of these is considered in turn below.

Consistent charging arrangements

3.26. We support the concept of consistency and the facilitation of customer choice and the positive effects it has on competition in markets. By ensuring a consistent MITS boundary definition and consistency in the provision of customer choice and adequate information to make that choice, customers are able to make decisions on the most efficient type of connection that accurately reflect the consequential costs and benefits. We consider that providing all generation customers with an accurate local generator TNUoS charge promotes these principles.

3.27. In our assessment, NGET's proposal better facilitates competition in that it provides a common boundary definition for the local and wider network between onshore and offshore networks and allows customer to choose the type of connection which is most suitable for their needs.

3.28. We are currently of the view that this modification promotes more effective competition by sharpening generators' exposure to the costs they incur on the system and because of the relative competitive pressures this exerts. We invite parties to comment further on this.

3.29. One respondent to NGET's consultation did however express the concern that the proposal will introduce discrimination between classes of user as it believes that the use of circuit expansion factors, security factors and substation tariffs means that the OFTO revenue requirement would be fully recovered from the offshore generation users, in effect a "deep" connection charge. We note NGET's explanation that the proposals do not represent a "deep" charge on the basis that generation as a whole will only be exposed to 27% of its cost. We would welcome respondents' further thoughts on this matter.

3.30. A key consideration in the development of effective competition is that there should not be discrimination between participants in the market and arrangements should be, wherever possible and appropriate, consistent. We are currently of the view that NGET's proposal does not discriminate either in favour or against any class or type of generation user as all appear to be treated consistently. We would like to hear from parties who may hold an alternative opinion on this.

3.31. Competition can be more effectively promoted if the charges for a service better reflect the costs of providing it. In this instance we feel that more effective competition would be encouraged if the levels of the local charge reflect the costs imposed on the transmission system by users and NGET's deterministic criteria to determine the local/wider boundary is well defined. We would particularly welcome views from parties on this point.

3.32. We request parties' thoughts on the view presented by NGET that, over time, the proposals would result in onshore generators paying less towards the cost of the transmission system and demand customers paying more. This is because the split of TNUoS revenue which is recovered from generators and demand is fixed in the ratio 27%/73% (G:D). As more offshore generation connects (with a higher capital cost relative to onshore connections) an increasing proportion of the 27% of total revenue to be recovered from all generation customers is attributable to the locational element incurred by offshore generators. This will have the effect of reducing the proportion of the 27% of total revenue to be recovered from onshore generation. To maintain the 27:73 split, therefore 73% of the cost of the new offshore transmission infrastructure must be added to the residual for demand users (located onshore only).

3.33. Further information provided by NGET in response to our request supports the view that there is a potential for a reduction to occur in all onshore generation zonal tariffs and increase in zonal average demand tariffs. NGET's indicative figures based on the 2007/8 transport model, and assuming a total of 8GW of offshore generation connecting in the three strategic areas, suggests reductions in all zonal generation tariff ranging from around £0.03/kW in the Midlands and an average reduction of £2/kW across Scotland. The movement can be explained by (i) the significant changes to the generation background and resultant network flow resulting from adding 8GW of generation, and (ii) the increase in generation capacity in areas such as the Thames Estuary which has the effect of 'shortening' the transmission network as the north-south discrepancy between centres of generation and demand has been reduced. For Scottish generators this results in a reduction to zonal average generation tariffs and an increase of zonal average demand tariffs.

3.34. We are interested in views on any potential competition effects arising from generator customers being exposed to a more cost reflective locational charge relative to onshore demand connections.

Impact on the costs of entry

3.35. We consider that the disaggregation of the local and wider charge offshore has the potential to reduce the costs of entering the market. We recognise that the proposed local charge would not be the determining factor for a generator between choosing to enter the market or not. However, the local charge could be an

important factor influencing elements of the connection design and location of generators. By introducing a more cost-reflective signal at a local circuit and substation level, particularly in view of the differences in the level and variability of capital costs offshore, offshore generators are provided with more information on and control over their costs. We would welcome respondents' views on this, in particular the possible overall effects this may have on both the transmission network and market for electricity generation.

3.36. Given the level and variability of offshore capital costs, the proposed combination of the circuit and substation component of the local charge may be seen to particularly benefit offshore renewable generators. This is due to the fact that they may be able to better realise and benefit from the trade-off between the cost of transmission capacity and the level of security of the connection. We would welcome respondents' views on this.

Complexity and transparency

3.37. A potential barrier to competition is the transparency and complexity of the rules under which generators participate in the electricity wholesale market. Charging constitutes one element of those arrangements. The ability for customers to make informed decisions and choose their type and location of connection encourages competition and the ability to do so is, to a large extent, dependant on the extent to which the charging regime is both transparent and stable. We note that in developing the proposed modification, NGET has considered the balance between the accuracy of cost signals and the potential complexity of the charging rules. We would welcome parties' views on whether the proposed modification strikes an appropriate balance between cost reflectivity, transparency and stability.

3.38. Some respondents to previous consultations voiced the view that the proposal increases the complexity of the charging methodology and introduces subjective engineering criteria to determine the local/wider system boundary. We welcome views on the complexity and transparency of the rationale for the MITS node definition as proposed by NGET, and for views on whether the proposed boundary strikes an appropriate balance between transparency, complexity and stability.

3.39. We welcome views on whether NGET's explanation of how such an approach is to be updated and communicated in future provides users with adequate transparency on the proposed local charge arrangements and their exposure to future changes.

Reflecting developments

3.40. NGET's transmission charging methodology must also properly take account of developments in its transmission businesses. NGET states in the Conclusions Report to its consultation on GB ECM-08 that the modification proposals takes account of development in its transmission business by providing the Use of System charging arrangements required for the introduction of the regulated offshore transmission network in 2010/11.

3.41. We consider that the offshore charging proposals are compatible with the developments in NGET's transmission business in relation to its role as designate GBSO for offshore transmission as well as the wider development in the licensing and regulatory regime for offshore transmission.

4. Assessment against Authority's wider duties

Chapter Summary

This chapter sets out an assessment of the other key aspects of the proposal that are relevant to the Authority's wider duties. These include consideration of the impacts on consumers, achievement of sustainable development, non-discrimination, security of supply and the environment. This chapter also includes discussion of the two competing implementation alternatives as set out by NGET in its Conclusions Report.

Question box:

Question 1. Do respondents consider that there are any aspects of the proposal that have not been fully assessed against the factors set out in this chapter?

Question 2. We welcome parties' views on the wider implications of the benefit that may ultimately be expected to be passed through to consumers.

Question 3. Do respondents wish to provide further detail of any discrimination concerns?

Question 4. We welcome parties' views on the security of supply impacts associated with NGET's proposed change.

Question 5. Do respondents wish to present any additional qualitative or quantitative analysis that they consider would be relevant to assessing this proposal?

Areas for assessment

4.1. This section sets out an assessment of the impact of NGET's modification proposal on factors that the Authority must have regard to when carrying out its functions including its principal objective and statutory duties (described in appendix 2). This assessment is not intended to be an exhaustive assessment of all general duties but only those we consider are of relevance to the assessment of the impact of NGET's proposal.

Impact on consumers

4.2. The Authority's principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of consumers, present and future, wherever appropriate by promoting effective competition.

4.3. It is in the interests of consumers that the transmission charging arrangements facilitate efficient use of and connection to the transmission system, which in turn ensures that the cost of delivery of the transmission infrastructure necessary for the associated transmission networks is not higher than it needs to be. It is these costs which will ultimately be borne by electricity consumers.

4.4. To the extent that NGET's proposed charging arrangements could result in some offshore generators more effectively assessing the cost and charge implications of

alternative connection designs and making the most efficient and economic design choice then the total costs of transmission should, over time, be reduced to the benefit of consumers.

4.5. If the cost-reflective charging signal for offshore transmission infrastructure assets local to generation connections did not accurately reflect the level of cost that a user imposed on the local transmission network, then any positive impacts on consumers are likely to be diluted or not realised at all. For example, if the cost reflective signal was not an accurate reflection of the costs imposed or avoided it would be expected that users would not be able to make efficient decisions when choosing connection designs and location. The impact of this is that the total costs of the offshore transmission system would be at a less economic level, to the detriment of generators and consumers.

4.6. In seeking to quantify the impact on consumers, it is important to assume that all costs and benefits that apply uniformly to all generators will be passed through to consumers. This includes additional wider transmission costs which are socialised through the current Transmission Charging Methodologies, for example constraints costs and reserve costs which are collected via a uniform Balancing Services Use of System (BSUoS) charge. We welcome parties' views on the wider implications of the benefit that may ultimately be expected to be passed through to consumers. Below are some of the impacts that we believe to be relevant:

Potential benefits

- Carbon abatement and EU targets – offshore renewables are expected to make an important contribution to the achievement of the UK's share, when agreed, of the EU target of sourcing 20 per cent of energy from renewable sources by 2020.
- Wholesale electricity prices – reducing electricity prices arising from ensuring that the cost of delivering the infrastructure necessary for the associated transmission networks is not higher than it needs to be.
- There are also secondary effects to consider arising from the choice to connect via a less secure connection design such as the potential for speedier connection of renewable generation given the barriers to connect.

Potential costs

4.7. Although not a direct impact of the proposed change to the charging rules, there is a potential negative secondary effect of additional reserve costs – costs associated with increased reserve requirement from conventional plants to make up sudden shortfalls, due to the increase in connected capacity of intermittent wind generation.

Impacts on sustainable development

4.8. The Energy Act 2008 contains provisions which, once commenced, will modify the general duties of the Authority in carrying out its functions under the Gas Act 1986 and the Electricity Act 1989. In particular, those changes will mean that, when carrying out its functions in the manner which it considers is best calculated to further its principal objective, the Authority must do so by having regard to the need to contribute to the achievement of sustainable development equally with the need

to have regard to the need to secure that all reasonable demands for electricity and gas are met and that licensees are able to finance their regulated activities.

4.9. We have considered GB ECM-08 in the context of the five sustainable development themes, set out below, which were identified by the Authority, drawing on the UK Government's Sustainable Development Strategy that set out how Ofgem will contribute to the sustainability agenda¹³.

Managing the transition to a low carbon economy

4.10. We consider that the theme of managing the transition to a low carbon economy is particularly relevant to GB ECM-08. As noted above, offshore renewables are expected to make an important contribution to the achievement of the UK's share, when agreed, of the EU target of sourcing 20 per cent of energy from renewable sources by 2020, the UK's emission reduction commitments under the Kyoto Protocol, and the domestic targets of a reduction in CO₂.

4.11. Furthermore, any proposal which facilitates individual parties to take better account of the relevant costs they incur on the transmission network when making economic and efficient decisions on whether to trade electricity between specific locations will contribute towards the economic development of the GB transmission system, both onshore and offshore.

4.12. From a sustainable development perspective, more accurately reflecting costs of economic and efficient investment decisions may also better facilitate earlier connection of certain generation connection design, in particular renewable generation locating at the periphery of the network and offshore specifically.

4.13. Other things being equal, NGET's proposed offshore charging arrangements are therefore likely to be positive for the economic connection of intermittent generation which in turn will have a beneficial impact on the environment.

Promoting energy savings

4.14. Our analysis does not quantify the impact on energy savings.

Eradicating fuel poverty and protecting vulnerable customers

4.15. The Authority has duties in relation to the impact of proposals on the sick, disabled, elderly, those on low incomes and rural customers, as well as to contribute to the achievement of sustainable development. In considering the impact of the proposals, we are required to have regard to UK Government guidance regarding the attainment of social and environmental policies.

4.16. Our initial view is that, further to the issues considered above in relation to sustainable development, the most important consideration from the perspective of social objectives is the overall impact of GB ECM-08 on consumers. We must make

¹³ See Ofgem's second annual Sustainable Development Report, November 2007.

sure that measures we need to take to tackle climate change are not any more expensive than they need to be. As we set out elsewhere, if the cost reflective signal was not an accurate reflection of the costs imposed or avoided it would be expected that users would not be able to make efficient decisions when choosing connection designs and location. The impact of this is that the total costs of the offshore transmission system would be at a less economic level, to the detriment of generators and consumers.

Ensuring a secure and reliable gas and electricity supply

4.17. GB ECM-08 is likely to promote greater diversity in electricity supply by encouraging the development of new renewable generation. Furthermore, the charging rules themselves do not change whether the wider transmission network is compliant with minimum security criteria set out in the GBSQSS.

Supporting improved environmental performance

4.18. As noted above, GB ECM-08 is likely to promote greater diversity in electricity supply by encouraging the development of new renewable generation. This is likely to have broader environmental impacts in terms of further diversifying the generation mix of the UK.

Non discrimination

4.19. Under this proposal, all generation that is directly connected to an offshore transmission network when the offshore regime goes live¹⁴, from which point unlicensed participation in the transmission of electricity offshore at voltages of 132kV and above would be a prohibited activity, will be eligible for a modified TNUoS charge comprising a local locational element, a wider locational element, a local substation element and a residual element. This is consistent with onshore networks where all generation that is currently directly connected to the transmission network will be subject to such a modified TNUoS charge from 1 April 2009.

4.20. Further views are invited on this issue.

Security of supply

4.21. The key issue in relation to security of supply is the ongoing role of the GBSQSS. The GBSQSS sets out a coordinated set of criteria and rules (for example cost-benefit techniques and weather-related operation) that the GB transmission licensees shall use in the planning and operation of the GB transmission system and the connection of generators. The GBSQSS requirements minimise the risk of a transmission fault compromising the security of the wider transmission system and the ability of the GBSO to discharge its operational responsibilities. The GBSQSS criteria also ensure that any choice of non-standard connection design has no implication for the security of the MITS or for the security and quality of supply for all customers.

¹⁴ In other words, when sections 89 and 180 of the Energy Act 2000 are commenced by the Secretary of State, i.e. the 'Go-live' date (June 2010).

4.22. Section 90 of the Energy Act 2004, allows for the Secretary of State, amongst other things, to make modifications to the transmission and distribution standard licence conditions and industry codes which he considers appropriate for purposes connected to offshore electricity transmission. In relation to GBSQSS and in terms of offshore access, NGET's main conclusions and recommendations were as follows:

4.23. In terms of offshore access, NGET's main conclusions and recommendations were as follows:

- Offshore the GBSQSS will not require an offshore transmission system providing a connection to an offshore power station to have full network redundancy.
- The principles applied to customer-requested design variations should be extended to offshore connections; and
- If a restricted capacity has to be shared between parties, entitlements should be set by pro-rating the different parties' capacities.

4.24. The application of these principles will mean that the minimum offshore transmission system connection requirements (to meet the minimum security requirements defined in the offshore GBSQSS) for offshore generators allow for a connection by a single offshore transmission circuit (i.e. there is no alternative connection if that transmission circuit is out of service). This reflects the high cost of offshore transmission system infrastructure. Offshore generators do not need to incur the costs associated with having fully firm transmission access rights in respect of the offshore transmission system.

4.25. We invite views on whether there are any negative security of supply impacts associated with NGET's proposed change.

Best regulatory practice

4.26. The modification proposal, and more explicitly Ofgem's approach to assessing the proposal, is relevant to the Authority's obligations and commitment to implement regulatory best practice. Our decision to publish this impact assessment and to give six weeks for responses is in line with our published impact assessment guidance. Taking into consideration the need to provide a sufficient period of time to consider respondents' views and noting the extensive consultation process that has already been undertaken on the related topic of specific charging arrangements for offshore transmission networks; we consider that a six week consultation period is appropriate.

4.27. We recognise that, in advance of the enactment of the relevant sections of the Energy Act 2004, the development, submission and subsequent Authority approval of a charging modification to introduce offshore charging arrangements would have no practical effect as there would be no licensed offshore transmission systems until the offshore regime reaches "go live".

4.28. We consider that making a decision on the proposed charging modification would be consistent with our duties under 3A(5A)(b) of the Electricity Act 1989 which provides that when carrying out its functions the Authority must have regard to "any

other principles appearing to ... it to represent the best regulatory practice". We consider the ability of the Authority to make a decision on the proposed charging modification at this time will enable licensees to plan the future of their business with a reasonable degree of assurance.

4.29. We are also of the opinion that this decision process is also consistent with our duty under section 3A(2)(b) of the Electricity Act 1989 to secure that licence holders can finance their activities which must include, for potential licensees planning in advance how to bid when the tender window opens.

Impacts on health and safety

4.30. We do not consider that this modification proposal will have any impact on health and safety.

Risks and unintended consequences

4.31. Given the Authority's principle objective to protect consumers' interests, one of the key risks associated with GB ECM-08 is that the ability of users to make an efficient decision when choosing connection designs and/or making investment decisions may be restricted. This could occur where: (i) The component levels of local charge are either too low or too high, or (ii) the deterministic boundary criteria are misaligned somehow.

4.32. In such an instance, the local charge would provide insufficient signal of the costs of connecting by various designs of connection. In doing so, competition would be distorted to the detriment of the market. We would particularly welcome views from parties on this point.

4.33. A concern raised by a number of respondents with an interest in offshore development projects is that the targeting of incremental local substation and circuit will have a detrimental impact on the development of offshore generation. We have applied the high level model available from the BERR website¹⁵ to consider a number of sensitivities from an offshore generators perspective, assuming a 300MW generator as per NGET's charging example.

4.34. Based on the assumptions we have used in the model we consider the impact of key changes on the post tax nominal project IRR are as follows:

- A £200k change in windfarm construction cost changes IRR by +/- 1.8% (illustrative of a capital cost £1.4m/MW)
- A 5% change in generator utilisation changes IRR by 1.9%
- A £10/MWh change in energy/ROC price changes IRR by +/- 1.9%
- A 14% change in tax rates changes IRR by 1.1%; and
- A £6/kW change in TNUoS (reflecting the potential change by NGET) changes IRR by 0.4%.

¹⁵ Available from BERR's website:
<http://www.berr.gov.uk/whatwedo/energy/whitepaper/review/models/page32771.html>

4.35. Clearly, there are many factors that have a significant impact on project returns, with construction cost, utilisation, and revenues being prevalent. Also, factors such as currency risk and raw material prices (e.g. the recent fall in the price of steel) can also have a significant influence. By comparison, changes to transmission charges appear to have a much smaller impact e.g. equivalent to a 1% change in generator utilisation, or a £40k/MW change in generator capex. We would welcome views and further quantitative analysis from parties on the sensitivity around the proposed TNUoS charging options for an offshore windfarm and the potential impact on returns.

Interaction with TAR

4.36. GB ECM-08 is being considered at a time when the industry, Ofgem and Government are developing proposals for a new regime for transmission access under TAR. Ofgem and industry are working hard to ensure that access to the transmission system, and resultant transmission charges, do not act as a barrier to any form of generation technology or connection type. Proposals for the reform include: a fundamental re-design of the existing access arrangements; measures to provide appropriate incentives for the transmission operators to build new infrastructure in a timely and efficient manner; and short term measures to help minimise the current queue for connections.

4.37. The transmission system comprises both assets that form part of the 'wider transmission system' and assets that can be said to be 'local transmission system' assets. The proposed charging modification aims to more accurately define the offshore assets that constitute local transmission system infrastructure in order to better facilitate the consideration of different connection designs for access to the onshore system. In doing so, the proposed split could potentially better facilitate the delivery of access reform under TAR.

4.38. However, whilst there may be a consequential effect on the ongoing discussions within the TAR process, our consideration of GB ECM-08 is not dependent on the progress of TAR. We would welcome respondents' views on this.

Embedded transmission

4.39. NGET presented two competing implementation alternatives in its Report. These two options are substantively the same, except for the way that NGET proposes to recover the charges levied by a Distribution Network Operator (DNO) for the connection and the use of its network by an embedded offshore transmission:

- **Option 1** includes all elements of the offshore electricity transmission charging proposals consulted upon by NGET, including the principle of introducing an embedded transmission charge within the TNUoS charging methodology. This option will use the established TNUoS charging methodology governance process and would only require technical changes in the treatment of the pass-through elements in its revenue restriction licence condition.
- **Option 2** has not been fully worked-up by NGET in the Report. (The report only indicates that it would exclude the embedded transmission charge element of the proposals from the TNUoS charges).

4.40. We are of the initial view that Option 1 is preferred to Option 2 for two following reasons:

- It will avoid the burden of implementing parallel governance processes for processes; and
- The simplicity of the charging arrangements proposed, sufficiently overweighs the potential need to deal with proposals to introduce socialisation of the embedded transmission charges.

4.41. We welcome parties' views on this preliminary minded-to position.

5. Process and way forward

Chapter Summary

This chapter sets out the process that we intend to adopt in order to reach a decision on the charging modification proposal and identifies a timetable for the publication of that decision.

Proposed process

5.1. In line with our published guidance on impact assessments, this document provides six weeks for respondents to submit any comments. The Authority will take responses, and any other relevant information, into account in making its decision as to whether or not to veto the proposal.

5.2. SLC C5(4) of NGET's electricity transmission licence sets out that, where the Authority intends to undertake an impact assessment, NGET will not make any modification to the use of system charging methodology within three months of the report being furnished to the Authority. Therefore, we intend to publish our decision on NGET's proposal on or before 30 March 2009.

Proposed implementation timescales

5.3. If the Authority's decision is not to veto the proposal, NGET is seeking to implement the modification proposal following the commencement of the regulatory regime for offshore transmission to allow the charging arrangements to be reflected in the 2010/11 charging year.

Further information

5.4. Appendix 1 sets out both the details for responding to this Impact Assessment and the appropriate contact details should you have any questions. It also sets out a list of all the key areas where we have sought respondents' views in relation to the contents of this document. Respondents' views are welcomed on any other aspect this Impact Assessment.

Appendices

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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 on or before Wednesday 18 March 2009 and should be sent to:

Anthony Mungall
Transmission Directorate
Networks
Ofgem
70 West Regent Street
Glasgow, G2 2QZ

Tel: 0141 331 6010

Email: Anthony.mungall@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. Having considered the responses to this consultation, Ofgem intends to publish its decision on NGET's proposal by 30 March 2009. Any questions on this document should, in the first instance, be directed to the address above.

CHAPTER: Three

Question 1. Do respondents wish to present any additional quantitative analysis that they consider to be relevant to assessing the proposal?

Question 2. Do respondents consider that there are any aspects of the proposal that have not been fully assessed?

Question 3. Do respondents consider that the key features of the proposal strike an appropriate balance between cost-reflectivity, transparency and stability?

Question 4. We welcome further views on NGET's proposals concerning specific expansion factors and security factors and substation tariffs, including whether the differences between the onshore and offshore arrangements are justified by materiality in costs and practicality.

Question 5. Do respondents consider that this modification promotes more effective competition by targeting offshore transmission costs at offshore generators?

CHAPTER: Four

Question 1. Do respondents consider that there are any aspects of the proposal that have not been fully assessed against the factors set out in this chapter?

Question 2. We welcome parties' views on the wider implications of the benefit that may ultimately be expected to be passed through to consumers.

Question 3. Do respondents wish to provide further detail of any discrimination concerns?

Question 4. We welcome parties' views on the security of supply impacts associated with NGET's proposed change.

Question 5. Do respondents wish to present any additional qualitative or quantitative analysis that they consider would be relevant to assessing this proposal?

Appendix 2 – The Authority’s Powers and Duties

1.1. 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. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.¹⁶

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly¹⁷.

1.4. The Authority’s principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of consumers, present and future, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- Contribute to the achievement of sustainable development;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them¹⁸; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.¹⁹

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

- Promote efficiency and economy on the part of those licensed²⁰ under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;

¹⁶ entitled “Gas Supply” and “Electricity Supply” respectively.

¹⁷ However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.

¹⁸ under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.

¹⁹ The Authority may have regard to other descriptions of consumers.

- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity; and
- Secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard, to:

- The effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- The principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- Certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation²¹ and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

²⁰ or persons authorised by exemptions to carry on any activity.

²¹ Council Regulation (EC) 1/2003

Appendix 3 - Legal Framework for decision

Electricity Act 1989

1.1. The Electricity Act 1989 (the "Act") sets down the legislative structure under which the electricity industry operates including the roles and duties of the Authority. Sections 3A to 3C set out the Authority's principal objective and statutory duties.

1.2. The Authority's principal objective is "to protect the interests of consumers ... wherever appropriate by promoting effective competition" amongst other things listed. In addition the Act places a number of other duties on the Authority including carrying out its functions in a manner which is best calculated to secure a diverse and viable long term energy supply and having regard to the effect on the environment.

1.3. On 5 October 2004 the Authority became subject to two additional statutory duties under the Energy Act 2004. These relate to contributing to the achievement of sustainable development and having regard to the principles of best regulatory practice. In carrying out its duties the Authority must also have regard to any additional guidance issued by the Secretary of State in relation to social or environmental policies.

1.4. In addition to the regulatory framework set out under the Act, the electricity industry is also subject to European law and competition law. Section 3D of the Act confirms that the obligations imposed on the Authority under Sections 3A to 3C of that Act do not override contradictory duties or obligations under European law including Directive 2003/54/EC concerning common rules for the internal market in electricity and Directive 2001/77/EC concerning the promotion of electricity from renewable sources in the internal market.

Licence obligations

1.5. Standard condition C5 of NGET's electricity transmission licence sets out the relevant licence objectives with which the use of system charging methodology must conform. These are:

- a. to facilitate effective competition in the generation and supply of electricity and (so far as is consistent therewith) facilitates competition in the sale, distribution and purchase of electricity;
- b. to result in charges which reflect, as far as is reasonably practicable, the costs incurred by the licensee in its transmission business; and that
- c. so far as is consistent with sub-paragraphs (a) and (b), the Use of System charging methodology, as far as is reasonably practicable, properly takes account of the developments in the licensee's transmission business.

1.6. In making its decision whether or not to veto the proposed charging methodology the Authority will first consider if the proposals meet the relevant licence objectives.

Impact assessment

1.7. Section 5A of the Utilities Act 2000 (Duty of the Authority to carry out an impact assessment) applies where: (a) the Authority is proposing to do anything for the purposes of, or in connection with, the carrying out of any function exercisable under or by virtue of Part 1 of the Electricity Act or the Gas Act; and (b) it appears to the Authority that the proposal is important within the meaning set out in section 5A, but does not apply where the urgency of the matter makes it impracticable or inappropriate for the Authority to comply with the requirements of section 5A. Where section 5A applies, the Authority must either carry out and publish an impact assessment or publish a statement setting out its reasons for thinking that it is unnecessary for it to carry out an impact assessment.

1.8. Section 5A(2) sets out the matters which determine whether or not a proposal is "important" for the purposes of section 5A. These are where a proposal would be likely to:

- d. Involve a major change in the activities carried out by the Authority;
- e. Have a significant impact on market participants in the gas or electricity sectors;
- f. Have a significant impact upon persons engaged in commercial activities connected to the gas or electricity sectors;
- g. Have a significant impact on the general public in GB or in a part of GB; and
- h. Have significant effects on the environment.

1.9. The Authority is required to assess a modification proposal and decide whether or not to veto it on the basis of whether it better achieves the relevant objectives set out in NGET's transmission licence and is in accordance with our wider duties and principal objective.

1.10. We consider the proposal to be "important" for the purposes of Section 5A on the basis that it represents a considerable change to the structure of NGET's use of system charging methodology, the derivation of applicable network charges for use of the transmission system and recovery of allowable revenue. In our view, these proposed changes would significantly impact the level of transparency and control over the costs that existing and future market participants in the electricity transmission sector impose on the system and the resultant charges levied on them.

Environmental issues

1.11. In assessing the impact of GB ECM-08 the Authority has taken account of the potential carbon savings which may arise from GB ECM-08. The Authority has also taken account of carbon savings in its preliminary assessment GB ECM-08 in terms of the Authority's wider duties, e.g. in relation to economy and efficiency, the environment and sustainable development, and the Authority's principle objective to protect the interests of current and future consumers.

Appendix 4 - Glossary

A

Access Rights

The rights to flow specified volume of electricity, usually from a specified location (node or zone) to an explicitly or implicitly defined destination (e.g. market hub), and for a defined period. For firm access rights, a failure to deliver access due to insufficient network capacity is associated with financial compensation. For non-firm access rights, the flow is terminated without compensation when capacity is unavailable.

The Authority/ Ofgem

Ofgem is the Office of the Gas and Electricity Markets, which supports the Gas and Electricity Markets Authority (GEMA), the body established by section 1 of the Utilities Act 2000 to regulate the gas and electricity markets in GB.

B

Balancing Mechanism (BM)

The mechanism for the making and acceptance of offers and bids pursuant to the arrangements contained in the BSC.

Bid

In the context of the Balancing Mechanism, a bid is a tool used by the GBSO, whereby a user submits data representing its willingness to reduce generation or increase demand. National Grid then decides whether or not to accept the bid.

British Electricity Trading and Transmission Arrangements (BETTA)

The arrangements for the trading and transmission of electricity across Great Britain which are provided for by Chapter 1 of Part 3 of the Energy Act 2004, which have replaced the separate trading and transmission arrangements which existed prior to 1 April 2005 in Scotland and in England and Wales.

Balancing Services Use of System Charges (BSUoS)

The charges levied by National Grid in respect of the activities it undertakes to keep the transmission system in electrical balance at all time.

C

Connection Entry Capacity (CEC)

A measure of the maximum capability, expressed in MW, of a connection site and the associated generation units' connection to the transmission system.

Connection and Use of System Code (CUSC)

Multi-party document creating contractual obligations among and between all users of the GB transmission system, parties connected to the GB transmission system and National Grid in relation to their connection to and use of the transmission system.

Consents

The process of obtaining Consents for the construction of a new overhead line to serve, for example, a wind farm can essentially be broken down into two distinct areas. Consents to be obtained from the Secretary of State/ Planning authorities etc in relation to permission allowing a line to be built and secondly, and more practically, consent from landowners who will be affected by the construction of the new line. For a new line consent under section 37 of the 1989 Act will be required.

In addition to section 37 consent, the DNO/TO must also obtain consent from the landowners over whose land the line will run. If a voluntary agreement cannot be struck, then either the land will have to be compulsorily purchased, under the provisions of section 10 and Schedule 3 (which is usually used for substations), or a Necessary Wayleave obtained over it, under the provisions of section 10 (Schedule 4 paragraphs 6-8).

Constraints

In the event that the pattern of generation may exceed the safe operational limits of a particular line or transmission system equipment, the GBSO will take actions to reduce the output of generators at specific locations on the system. At present these actions are taken in the Balancing Mechanism in the form of bids, and also via ancillary services, such as Pre-Gate Closure Balancing Mechanism Unit Transactions (PGBTs). Where a user's output is constrained down at a point on the system, the overall balance of energy will need to be retained, and costs will be incurred by the GBSO in bringing replacement energy onto the system.

Contracted background

This is the planning background against which National Grid assesses applications for connection and use of system. The contracted background includes all users that have entered into an (ongoing) agreement with National Grid for connection or use of system.

D

Deep reinforcement

Deep reinforcement refers to the works conducted on the wider transmission system in order to accommodate a change in the generation and demand pattern.

Distributed Generation

A generator directly connected to a distribution system or the system of another user.

G

GB System Operator (GBSO)

The entity responsible for operating the GB transmission system and for entering into contracts with those who want to connect to and/or use the GB transmission system. National Grid is the GB system operator.

GB Transmission System

The system of high voltage electric lines providing for the bulk transfer of electricity across Great Britain.

K

Kilowatt (kW)/Megawatt (MW)/Gigawatt (GW)

A kW is the standard unit of electricity, roughly equivalent to the power output of a one-bar electric fire. A MW is a thousand kilowatts. A GW is a thousand megawatts.

Kilowatt hour (kWh)/Megawatt hour (MWh)/Gigawatt hour (GWh)

One kilowatt hour is the amount of electricity expended by a one kilowatt watt load drawing power for one hour. A MWh is a thousand kilowatt hours. A GWh is a thousand megawatt hours.

L

Long-run marginal costs (LRMC)

In the context of electricity transmission, long-run marginal costs are the marginal costs of establishing and using network capacity. They include, for example, marginal costs for network reinforcement, as well as resulting network losses and residual congestion costs.

Local works

Those works required to provide a generator with a connection to the transmission network that would enable it to export power.

O

Offer

In the context of the Balancing Mechanism, an offer is a tool used by the GBSO, whereby a user submits data parameterising its willingness to increase generation or reduce demand. National Grid then decides whether or not to accept the offer.

S

Short-run marginal costs (SRMC)

In the context of electricity transmission, short-run marginal costs are the marginal costs of using established network capacity. They include, for example, network losses and congestion costs.

Short Term Transmission Entry Capacity (STTEC)

STTEC is a firm capacity provided, provided within-year, in 4, 5 or 6 week blocks.

T

Transmission Asset Owner (TO)

There are three separate transmission systems in Great Britain, owned by three Transmission Asset Owners, National Grid Electricity Transmission plc, Scottish Hydro Electric Transmission Ltd and Scottish Power Transmission Ltd. National Grid also has the role of system across the whole of Great Britain.

Transmission Entry Capacity (TEC)

The contracted maximum amount of electricity that each user is permitted to export on to the GB transmission system at any given time.

Transmission Network Use of System (TNUoS) charges

Charges that allow National Grid to recover the costs of providing and maintaining the assets that constitute the GB transmission system.

Appendix 5 - 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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Ofgem
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London
SW1P 3GE
andrew.macfaul@ofgem.gov.uk