

Directions issued by the Gas and Electricity Markets Authority to National Grid Electricity Transmission plc in relation to the Significant Code Review under Project TransmiT

On 22 September 2010 the Authority launched Project TransmiT¹, an independent and open review of electricity transmission charging and associated connection arrangements with a view to ensuring that arrangements are in place that facilitate the timely move to a low carbon energy sector whilst continuing to provide safe, secure, high quality network services at value for money to existing and future consumers (the TransmiT objectives).

On 27 May 2011, in the light of the evidence gathered, the Authority consulted on whether to progress consideration of the charging elements of Project TransmiT², in particular those relating to transmission network use of system charges (TNUoS charges) as set in accordance with the use of system charging methodology (UoS charging methodology) in section 14 of the Connection and Use of System Code (CUSC), through a Significant Code Review (SCR), under Standard Licence Condition C10 (SLC C10) of the transmission licence granted to National Grid Electricity Transmission plc (NGET) and clause 8.17.6 of the CUSC.

On 7 July 2011 the Authority published notice pursuant to SLC C10 and clause 8.1.4(a) of the CUSC that it was commencing a SCR on the electricity transmission charging issues under Project TransmiT³ (the TransmiT SCR), setting out the scope of the SCR and the reasons why it considered it to be appropriate.

On 4 May 2012 the Authority published its conclusions on the TransmiT SCR in accordance with clause 8.1.4(c) of the CUSC⁴ (the SCR conclusions document). In that document the Authority indicated that it intended to issue directions to NGET in relation to the TransmiT SCR in respect of the making of a CUSC Modification Proposal to modify the UoS charging methodology.

¹ Project TransmiT: A Call for Evidence

http://www.ofgem.gov.uk/Networks/Trans/PT/Documents1/TransmiT_Call_for_Evidence_Letter.pdf

² Project TransmiT: Approach to electricity transmission charging work

http://www.ofgem.gov.uk/Networks/Trans/PT/Documents1/110527_TransmiT_charging_letter.pdf

³ Project TransmiT: Electricity transmission charging Significant Code Review launch statement

http://www.ofgem.gov.uk/Networks/Trans/PT/Documents1/110707_Final%20launch%20SCR%20statement.pdf

⁴ Project TransmiT – Electricity charging arrangements Significant Code Review conclusions

<http://www.ofgem.gov.uk/Networks/Trans/PT/Documents1/TransmiT%20SCR%20conclusion%20document.pdf>

In accordance with clause 8.17.6 of the CUSC and paragraph 6C(a) of SLC C10 the Authority hereby directs NGET to make a code modification in the terms and for the reasons set out in the Annex hereto (the directions).

The directions, together with the SCR conclusions document, constitute notice pursuant to section 49A (Reasons for decisions) of the Electricity Act 1989.

Unless the context otherwise requires, words or expressions in these directions have the meaning ascribed to them in the CUSC.

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Signed on behalf of the Authority and authorised for that purpose by the Authority

25 May 2012

Annex

The directions

Reasons for the directions

- 1) The reasons for the directions are set out in the SCR conclusions document and should be read in that context. Without prejudice to the generality of the reasoning set out in that document and for ease of reference, we refer below to particular elements of that reasoning in relation to specific elements of the directions.
- 2) For the reasons set out at paragraphs 3.11 to 3.18 of the SCR conclusions document, the Authority considers that it is appropriate for industry to consider further developing the method of calculating TNUoS charges within the UoS charging methodology in accordance with the principles of investment cost related pricing (ICRP) so that:
 - a) it better reflects the differing incremental impacts of individual generators on the Transmission Owners' costs in a manner which is consistent with the Security and Quality of Supply Standard (SQSS),
 - b) it maximises benefits to current and future consumers, and
 - c) it more generally achieves the TransmiT objectives.
- 3) In particular, the Authority considers for the reasons set out at:
 - a) paragraphs 3.22 to 3.27 of the SCR conclusions document, that proposals should be developed for modifying the UoS charging methodology for generation charges so as better to reflect the "year round" and "peak" backgrounds applied in the SQSS,
 - b) paragraphs 3.24 to 3.28 of the SCR conclusions document, in developing such modifications, that consideration should be given to whether it is appropriate to assume that intermittent generation technology types should only contribute to charges based on the "year round" background, and
 - c) paragraphs 3.21 to 3.39 and 3.44 to 3.48 of the SCR conclusions document, that consideration should be given to how provisions reflecting the year round background might best be structured and levied so as more accurately to reflect the incremental costs of transmission infrastructure investment on the efficient year round operation of the transmission system in accordance with the SQSS.

- 4) The UoS charging methodology does not yet consider the manner in which costs relating to high voltage direct current links that parallel the onshore alternating current (AC) network (HVDC links) should be recovered. The Authority considers that in order to facilitate the development of such links it is appropriate for industry to consider how these should be treated within the UoS charging methodology.
- 5) In particular, the Authority considers for the reasons set out at:
 - a) paragraphs 5.21 to 5.23 of the SCR conclusions document, and because of the controllable nature of these links relative to power flows on the AC network, and the calculation of an impedance for the HVDC link (i.e. the characteristic that determines power flow) that will result in some change in incremental flow on the link, that consideration should be given to the treatment of power flow on an HVDC link in the load flow element of the charging model, and
 - b) paragraphs 4.61 to 4.64 and 5.22 of the SCR conclusions document, that industry should consider the alternate options for recovery of such costs in accordance with the principles of cost reflectivity, assessing their utilisation and system operation where possible.
- 6) The UoS charging methodology does not yet consider the manner in which costs relating to potential transmission links which may be established between the Scottish mainland and the Scottish islands of Western Isles, Orkney and Shetland should be recovered. The Authority considers that in order to facilitate the development of such links it is appropriate for industry to consider how these should be treated within the UoS charging methodology.
- 7) In particular, the Authority considers for the reasons set out at:
 - a) paragraphs 4.9 to 4.18 of the SCR conclusions document, that such proposals should be consistent with the principles of cost reflectivity,
 - b) paragraphs 4.38 to 4.40 of the SCR conclusions document, that consideration should be given to the extent to which it is appropriate for potential island links to become part of the Main Interconnected Transmission System (MITS) from a charging perspective,

- c) paragraphs 4.27 to 4.37 of the SCR conclusions document, that consideration should be given to how best to structure the locational tariff, including the cost base to be used in calculation of the relevant expansion factor,
- d) paragraphs 4.46 to 4.47 and 5.20 of the SCR conclusions document, that consideration should be given to the security factor which should be applied to potential island links deemed to meet the MITS charging definition, and in particular whether the current locational security factor (currently at a value of 1.8) or a treatment reflective of the actual resilience of the relevant subsea component should be applied,
- e) paragraphs 4.64 and 5.22 of the SCR conclusions document, that consideration should be given to the extent to which the methodology for the recovery of the costs of potential transmission links to the Scottish islands of Western Isles, Orkney and Shetland that use HVDC technology should follow the methodology developed to address recovery of the costs of HVDC links more generally, and
- f) paragraphs 4.39 and 4.40 of the SCR conclusions document, that consideration should be given to whether it is appropriate to refine the application of the current MITS charging definition to anticipate potential transmission links to the Scottish islands of Western Isles, Orkney and Shetland becoming part of the MITS from a charging perspective.

Terms of the directions

- 8) The Authority hereby directs that by 20 June 2012 NGET shall raise a proposal (the Proposal) to modify the CUSC in accordance with the terms specified below, and shall not withdraw such Proposal unless it has first obtained the Authority's consent to do so.
- 9) Consistent with the reasons for the directions specified in the SCR conclusions document, the terms are intended to enable NGET and industry to bring forward relevant proposals to modify the UoS charging methodology under the Proposal with a view to addressing the respective issues identified under each relevant heading.

Improvements to ICRP

Issues

- 10) The UoS charging methodology does not reflect the differing incremental impacts of individual generators on the Transmission Owners' costs in a manner which is consistent with the principles set out in the SQSS, and in particular it does not recognise:
 - a) the impact of incremental power flows from different types of generation sources located at different points in the network on the transmission infrastructure investment costs associated with efficient year round operation of the transmission system as a result of the differing characteristics of such generation,
 - b) that transmission infrastructure investment, that current and future transmission system users impose, is informed by analysis of the relative costs and benefits of such infrastructure investment as against operational expenditure under the SQSS, or
 - c) the possibility of the sharing of transmission capacity between generators, for instance as may arise as volumes of variable generation increase.
- 11) These issues relate to the furtherance of all the Applicable CUSC Objectives, as provided at paragraph 5 of Standard Licence Condition C5 of the transmission licence granted to NGET (SLC C5).
- 12) During the course of the TransmiT SCR, the modelling of certain forms of improved ICRP suggested that such approaches might entail some costs to consumers, and therefore it is desirable that consideration is given to whether alternative forms might

deliver benefits in relation to cost reflectivity whilst reducing the likelihood of such costs.

Terms

13) The Proposal shall set out proposals to modify the UoS charging methodology for generation charges which address the issues referred to in paragraphs 10 and 12 in accordance with the principles referred to in paragraphs 28 and 29 below.

14) The proposals referred to in paragraph 13 shall include proposals for restructuring the UoS charging methodology:

a) so that generator charges are calculated by reference to the impact of different types of generation located at different points in the network:

i) on the incremental costs of transmission infrastructure investment required to secure demand at system peak (the peak condition), and

ii) on the incremental costs of transmission infrastructure investment associated with efficient year round operation of the transmission system (the year round condition) in a manner consistent with the SQSS; and

b) so that the peak condition is calculated:

i) by reference to generation background scaling factors that are representative of the impacts on incremental costs of transmission infrastructure investment required to secure demand at system peak imposed by different technology types, rather than a scaling factor which assumes that all technology types are equally likely to drive the same incremental cost in a given location, and

ii) so that, subject to paragraph 16, the factors used in the derivation of the Security Planned Transfer condition under Appendix C (C.2.1 to C.2.3) of the SQSS shall apply.

15) The proposals in respect of paragraph 14(a) shall set out, subject to paragraph 26, how NGET considers the following matters might best be addressed:

a) how the charging structures in paragraphs 14(a)(i) and 14(a)(ii) should be applied geographically, particularly having regard to those zones that are, or which may become, dominated by one type of generation technology, and

b) how the year round condition might best be structured and levied, so as more accurately to reflect the incremental costs of transmission infrastructure investment from a particular generator on the costs of efficient year round operation of the transmission system (as informed by analysis of the relative costs and benefits of infrastructure investment as against operational expenditure), taking account of the various options examined by the Electricity Transmission Charging SCR Technical Working Group and any other options which might better achieve the objectives of paragraph 13 and 14 above.

16)The proposals in respect of paragraph 14(b) shall set out, subject to paragraph 26, the factor that NGET considers should apply in the tariff element of the charging model to intermittent generation technology types for the purposes of the peak condition and, in particular, shall consider whether:

- a) a factor of zero for such generators (as is consistent with relevant application in the SQSS), or
- b) some other factor,

should apply for charging purposes.

HVDC Issues

Issues

17)No specific consideration has been given in the development of the UoS charging methodology to the manner in which costs relating to HVDC links should be recovered, and therefore it is not clear whether such recovery would be cost reflective if such links were established.

18)This issue relates to the furtherance of all the Applicable CUSC Objectives, as provided at paragraph 5 of SLC C5.

Terms

19)The Proposal shall set out proposals to modify the UoS charging methodology for TNUoS charges to address the issues referred to in paragraph 17 above in accordance with the principles referred to in paragraphs 28 and 29, including a proposal for restructuring the manner in which UoS charges are calculated so that where account is taken of the

impedance from an HVDC power flow, it is calculated as the average of a ratio of total network boundary rating versus the HVDC link rating for all boundaries that the link crosses.

20)The proposals in respect of paragraph 19 shall also set out, subject to paragraph 26, those costs associated with HVDC links which NGET considers should be recovered through or incorporated in the expansion factor calculation, taking account of the consideration of this issue by the Electricity Transmission Charging SCR Technical Working Group, and in particular shall specify:

- a) whether all the costs associated with such links should be so recovered or incorporated, or
- b) whether the costs of HVDC converter stations at either end of the circuit should be recovered or incorporated by other means.

Island Link Issues

Issues

21)No specific consideration has been given in the development of the UoS charging methodology to the manner in which costs relating to transmission spurs connecting generation and demand with network technology not included in the expansion factors set out in clauses 14.15.47 and 14.15.49 of the CUSC (island links), such as those potential transmission links which may be established between the Scottish mainland and the Scottish islands of Western Isles, Orkney and Shetland, should be recovered, and therefore it is not clear whether such recovery would be cost reflective.

22)This issue relates to the furtherance of all of the Applicable CUSC Objectives, as provided at paragraph 5 of SLC C5.

Terms

23)The Proposal shall set out proposals to modify the UoS charging methodology which address the issues referred to in paragraph 21 above, in accordance with the principles set out in paragraphs 28 and 29.

24)The proposals in respect of paragraph 23 shall set out, subject to paragraph 26, how NGET considers the following matters might best be addressed:

- a) the extent to which the applicable tariff calculation for generators utilising island links, where such links are deemed to meet the MITS charging definition set out in clause 14.15.17 of the CUSC from a charging perspective, should be consistent with the approach which is proposed under paragraph 13 for the established mainland system (i.e. a wider system TNUoS tariff consisting of a wider locational tariff element and a residual tariff element),
- b) the extent to which the applicable locational tariff calculation for generators connected at a non-MITS node (i.e. a tariff reflective of the 'local' network and local transmission infrastructure assets to which a generator is connecting) should be consistent with the current tariff arrangements applicable on the established mainland system (i.e. a local system tariff consisting of a local circuit tariff element and a local substation tariff element),
- c) how the locational tariff may best be structured, including, but not limited to, consideration of the following:
 - i) the cost base used in the calculation of an expansion factor to be applied to island links, in particular considering the following alternatives:
 - (1) an infrastructure tariff utilising average, generic expansion factors based on type and size of such links, and
 - (2) an infrastructure tariff utilising specific expansion factors to recover the actual costs of individual island links, and
 - ii) the application of the security factor to island links deemed to meet the MITS charging definition set out in clause 14.15.17 of the CUSC from a charging perspective, and in particular whether to adopt:
 - (1) the locational security factor (currently at a value of 1.8) set out in clauses 14.15.54 to 14.15.56 of the CUSC, or
 - (2) a modified treatment to reflect the actual resilience of the subsea component of an island link (where export is dependent on a single subsea cable linking the MITS substation located on the island group to the next MITS substation on the mainland), which would be achieved through a methodology which reflects the (lack of) redundancy associated with a single link in the zonal tariff calculation through modifying the specific expansion factor applicable to the section of island link lacking redundancy by dividing the expansion factor

value for that section by the average level of security across the system as a whole,

- d) the extent to which the expansion factor calculation for island links should follow the methodology developed in accordance with paragraphs 19 and 20 above, and
- e) the extent to which it is appropriate to introduce an anticipatory application of the current MITS charging definition (as set out in clause 14.15.17 of the CUSC) from a charging perspective to applicable circuits on the islands, including consideration of the form, justification and impact of introducing an anticipatory application.

25) NGET shall be mindful in developing proposals in respect of paragraph 23 and 24 of the precedents which it may be setting for other aspects of the UoS charging methodology, and the Proposal shall specify that such precedents should be considered in any further development of these proposals by any Work Group.

Miscellaneous Terms

26) The Proposal shall make clear that the specific proposals put forward by NGET under paragraphs 15, 16, 20 and 24 are there to facilitate and not preclude any further consideration of the relevant issues and / or development of the Proposal under the CUSC Modification Process so as to address such issues in a different way so as better to achieve the purposes and objectives of the Proposal as set out in these directions.

27) In addition to the Proposal NGET shall raise any such consequential proposals for modification to the CUSC, including to section 3 (use of system) and section 11 (interpretation and definitions), as are required for the purpose of giving effect to the proposals specified above.

28) Modification proposals developed pursuant to these directions shall be consistent with the principles of cost reflectivity, whilst having regard to the desirability for stability and simplicity in transmission pricing.

29) Subject to paragraph 28, as far as possible the modification proposals developed pursuant to these directions shall:

- a) further the applicable relevant objectives,
- b) maximise value for money to existing and future consumers, and
- c) be supported by a robust evidence base,

and in so doing shall also give due consideration to the interests of existing and future consumers in the achievement of sustainable development.

30) These directions shall not prevent NGET from exercising its rights as the proposer of a modification under clauses 8.16.10 and 8.20.23 of the CUSC.