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DEPARTMENT FOR BUSINESS ENTERPRISE & REGULATORY REFORM

Transmission Access Review

A Call for Evidence for a Review of Transmission Access

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Target audience: Generators, transmission owners, distribution owners, suppliers, traders and developers

Overview:

In May 2007, the Government published its Energy White Paper 2007. The white paper announced a review, to be led jointly by Ofgem and the Department for Business, Enterprise and Regulatory Reform (BERR, formerly DTI), of the present technical, commercial and regulatory framework for the delivery of new transmission infrastructure and the management of the grid to ensure that they remain fit for purpose as the proportion of renewable generation on the system grows. This document constitutes the first step of a review of the transmission access arrangements in Great Britain (GB) that will culminate in a conclusions document in May 2008.

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Context

Energy is a vital part of every aspect of modern life in Great Britain and for our continued economic prosperity. The Energy White Paper 2007 set out the Government's international and domestic energy strategy to meet the long-term challenges we face in addressing climate change and ensuring security of energy supplies.

Increasing the amount of renewable generation connected to the electricity network is a critical part of achieving Government's energy policy goals. In the Energy White Paper, Government announced a review to be undertaken jointly between DTI (now BERR) and Ofgem of the framework for the delivery of new transmission infrastructure and the management of the grid to ensure that they remain fit for purpose as the proportion of renewable generation grows. In order to initiate this review BERR and Ofgem are jointly publishing this Call for Evidence to seek interested parties' input at the start of the review process.

The need to consider changes to this framework is driven by the current delays that the large volume of renewable generation seeking connection to the transmission system is facing and the potential effects these delays will have on the Government's climate change targets.

There is already considerable work progressing in this area through current industry governance arrangements as well as the measures announced in the Planning and Energy White Papers. All this work will provide important context and support the delivery of the review.

Associated Documents

Transmission Access and Losses Under NETA. May 2001.
http://www.ofgem.gov.uk/Markets/WhlMkts/Archive/101-22may01.pdf

A framework for considering reforms to how generators gain access to the GB electricity transmission system - A report by the Access Reform Options Development Group. April 2006.
http://www.ofgem.gov.uk/Networks/Trans/PriceControls/TPCR4/ConsultationDecisionsResponses/Documents1/14044-8306b.pdf

Meeting the Energy Challenge - A White Paper on Energy. May 2007.
http://www.berr.gov.uk/files/file39387.pdf

Final Conclusions Report - GB Queue Management. July 2007.
http://www.nationalgrid.com/NR/rdonlyres/47B95865-0225-45C2-B3BE-F753821B1E1B/18039/FinalConclusionpaper.pdf

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Summary

The Energy White Paper and Transmission Access

The Energy White Paper published in May 2007 announced a review, to be undertaken by Ofgem and BERR, of the transmission access arrangements in GB, in order to better support the timely and cost-effective connection of renewable generation.

The Government has a target of 10% that electricity supplied should come from renewable sources by 2010 and an aspiration to raise that to 20% by 2020. The industry has made the case that there are barriers preventing these targets from being achieved. Against the backdrop of the Government's renewable energy targets, it is vital to ensure that users of the GB transmission system continue to benefit from high levels of reliability, at an efficient cost.

As the energy regulator in GB, Ofgem's primary duty is to protect the interests of consumers by promoting competition and regulating monopolies. Ofgem also has statutory duties with regards to the environment and sustainable development.

In undertaking a review of the transmission access arrangements, the Government and Ofgem have recognised the ongoing difficulties generators face in acquiring connections, and that the GB transmission licensees face in building the required connections to accommodate a substantial queue of generation, mainly in Scotland. This queue of generation has become known as the GB Queue. At present, there are 12 gigawatts (GW) of new, mainly renewable generation waiting for connection to the transmission system in Scotland and more in other parts of the country. Whilst moves are afoot to improve this situation via short term measures to help identify and prioritise those generators that are most viable to connect, there is simply more generation wishing to connect than existing transmission system infrastructure can accommodate without substantial reinforcement works. Despite the unprecedented levels of capital expenditure sanctioned by Ofgem in the transmission price control review 2007/12 and the Transmission Investment in Renewable Generation (TIRG) mechanism[1], delays in planning are preventing substantial network reinforcements

[1] For more information please see the following documents:
http://www.ofgem.gov.uk/Networks/Trans/PriceControls/TPCR4/ConsultationDecisionsResponses/Documents1/16342-20061201_TPCR%20Final%20Proposals_in_v71%206%20Final.pdf, and
http://www.ofgem.gov.uk/Networks/Trans/PriceControls/TPCR4/ConsultationDecisionsResponses/Documents1/16342-20061201_TPCR%20Final%20Proposals_in_v71%206%20Final.pdf

from proceeding as quickly as expected. Therefore connection dates for many new generators are later than required.

The current GB transmission access arrangements have evolved from those that were in place since the privatisation of the electricity supply industry in the early 90s. These arrangements have performed well historically, accommodating substantial changes in the generation sector - mostly the connection of large new generation station and closure of old generation station. However, with the introduction of GB wide trading and transmission arrangements, and associated strong financial incentives to build new renewable generation, these arrangements have been subject to significant new challenges. Unlike the replacement of large generation stations of conventional technology, a substantial proportion of the new generation consists of renewable technology characterised by intermittent output and sited in a more dispersed pattern. There is a need to question whether these arrangements are best able to address the issues that the GB power market faces in achieving the Government's renewable targets for 2020.

On 26 July 2007, we published an open letter setting out the terms of reference for this Transmission Access Review (TAR). In it we set out our focus on ensuring that access arrangements are fit for purpose for 2020 and beyond.

This document represents a first step in exploring the case for change to the existing transmission arrangements, and is requesting views from the industry to support and develop models for reform. To help facilitate discussion, we have set out a range of potential models for access reform. Throughout the review, we will engage with industry, publish further documents and host workshops, with the expectation that the review will conclude in May 2008.

1. Introduction

Questions

There are no questions in this chapter.

Call for Evidence

1.1. This Call for Evidence seeks initial views on the issues to be considered during the Transmission Access Review (TAR). The review led by Ofgem and the Department for Business, Enterprise and Regulatory Reform (BERR) was announced in the Energy White Paper 2007. It will look at the arrangements for transmission access specifically from the perspective of connecting renewable generation. The review has been established because in the view of the Government and Ofgem, the expected changing profile of electricity generation, and in particular the increasing proportion of intermittent renewable generation, means the current framework for transmission access may need to be amended, to help achieve the Government's energy policy goals.

1.2. The Call for Evidence sets out some high-level models that will be developed during the review. Respondents to the review are invited to comment on these models and to propose alternatives that might support the objectives of the review. A full list of questions is in Chapter 6.

Background

1.3. Since 1990, some 25GW of new generation (mainly combined cycle gas turbine (CCGT)) has connected and some 20GW has disconnected from the transmission system in England and Wales. This has occurred successfully under the existing access regime.

1.4. The implementation of the British Electricity Trading and Transmission Arrangements (BETTA) in April 2005 introduced a competitive GB wide power market. This extended the existing arrangements in England and Wales to include Scotland. The implementation of BETTA saw a large number and volume of generation connection applications (both real and speculative) coming forward in Scotland at the same time, creating an unprecedented demand for new transmission infrastructure. The introduction of BETTA enhanced the incentive created by the Renewables Obligation Order 2002 (RO Order) by making renewable generation projects in Scotland more attractive because of new opportunities to sell power not only in England and Wales but also on the continent.

1.5. Furthermore, significant amounts of renewable generation capacity are now under development offshore and in other parts of GB that are remote from the current transmission network.

1.6. The large increase in the volume of renewable generation seeking connection has resulted in unique challenges in managing the transmission system. In accommodating renewable generation, two significant new factors have to be taken into account, namely:

- Much of the renewable generation is located remote from existing grid connections, creating a requirement for greater levels of construction expenditure as well as significant planning implications, and
- Much of the renewable generation is intermittent in nature, and does not exhibit the same operating characteristics as the rest of the conventional generation on the system.

1.7. The implications of these factors are that delays may result in the provision of transmission capacity due, firstly, to planning and, secondly, construction timescales (although renewable generation construction may also face delays for other reasons). Given that renewable generation is expected to have lower utilisation levels than conventional generation, it may not be necessary for as much physical transmission capacity to be constructed.

1.8. Despite the ongoing measures that are in progress to address the backlog of new connection applications, the conditions that have given rise to the GB Queue raise broader issues with the current transmission access arrangements. Developers of both renewable and conventional generation have become increasingly concerned about the difficulties of securing connection to and/or use of the GB transmission system. Projects have been delayed due to connection issues. This is mainly due to the time needed to build new transmission infrastructure where the network has physical access constraints, but also due to the lack of sufficiently flexible commercial arrangements for relevant types of generation.

1.9. Meeting the Government's aspiration of 20% of electricity supplied by renewable generation implies connecting around 20GW of renewable capacity (much of this is expected to be offshore and onshore wind). Such a change to the generation mix may require a change to the framework for planning and operating the GB transmission system to maintain the current levels of reliability. There is also a need to consider arrangements for shared transmission access to allow more generating capacity to be connected for a given amount of transmission capacity.

Transmission Access Review (TAR)

1.10. TAR will consider the present technical, commercial and regulatory framework for the delivery of new transmission infrastructure and the operation of the GB transmission system to ensure that they remain fit for purpose as the proportion of renewable generation on the system grows.

1.11. The main aim of TAR is to set out proposals for changes to the framework that will better support the connection of renewable generation to the grid in the medium

and long-term. The review will look ahead to 2020 and consider ways to support the delivery of the Government's aspiration of 20% of electricity supplied by renewable generation and any further international agreements, in Europe and more widely. These proposals will need to be consistent with the Government's energy policy goals.

1.12. The proposals arising from the review will recognise the duties of Ofgem as the independent economic energy regulator. Ofgem's primary duty is to protect the interests of electricity and gas consumers. Ofgem also has a duty under the Energy Act 2004 to contribute to sustainable development.

1.13. We anticipate the review will report as follows:

- In September 2007, Ofgem will report to the Secretary of State on the progress of the shorter term work on access arrangements that is already underway through the Short Term Access Governance (STAG) workstream. This work will provide the context for the medium and long-term view that will be developed in this review. For more information on the progress of the GB Queue management work undertaken please see Appendix 6.

- An interim report in December 2007 will set out the discussions held by TAR and a preliminary view of the models that have been explored, including consideration of the case for amending primary and secondary legislation.

- A final report in May 2008 will set out any recommendations for change and proposed processes to implement appropriate changes to the framework.

1.14. For information on the organisational structure of the TAR project, please see Chapter 6.

Implementation issues and interaction with existing processes

1.15. In addition to the general policy development and associated consultations that will be taken forward by TAR, during the process we will give consideration to the ways in which any proposals for change may be implemented. "Implementation" is one of TAR's four main workstreams, and will give consideration to the existing governance arrangements to ensure that they provide an appropriate framework for progressing amendments to the access regime that are identified by TAR.

1.16. We do not consider that this document is the timeliest stage for providing detailed thoughts on implementation issues, given that it is an initial Call for Evidence. Once we have engaged industry and developed more detailed models for access reform, only then would we consider it appropriate to explore ways in which these models are put into practice.

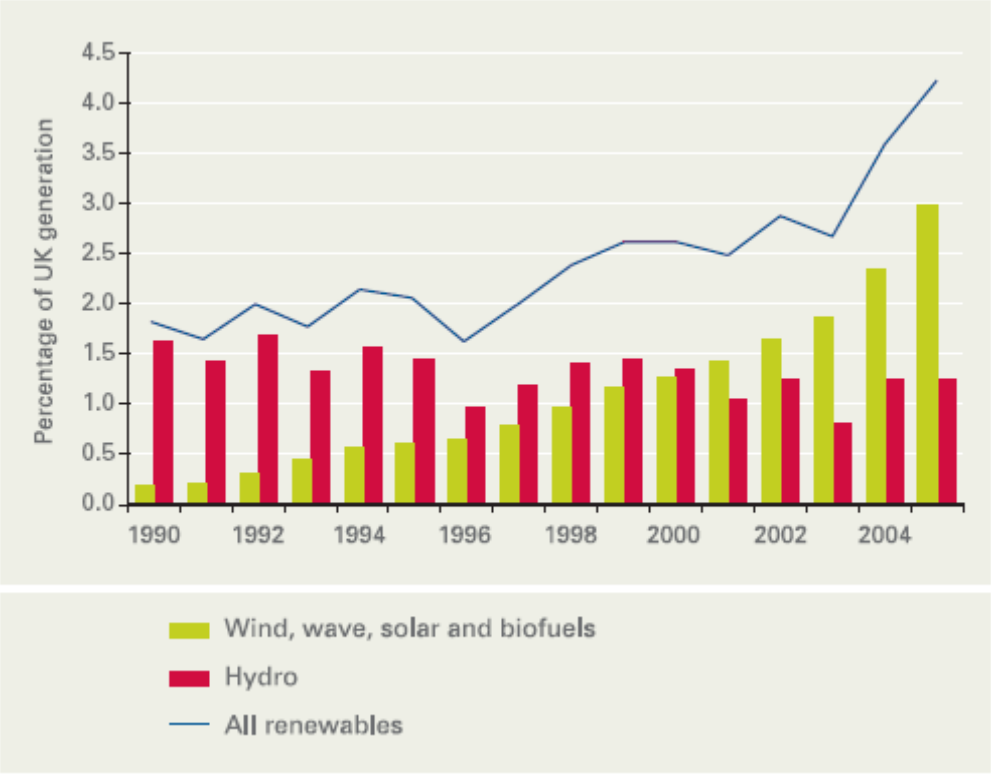
1.17. The industry may wish to give consideration to interactions between the work that will be ongoing as part of TAR and potential transmission access related proposals to amend existing industry codes. Given the broad issues that TAR will be considering, and the expectation that formal recommendations for change will be published in May 2008, industry may wish to utilise the TAR process to help develop thinking on transmission access reform, and propose models for consideration accordingly.

1.18. There will also be interactions between TAR and the developing offshore regime, for example in the allocation of access where both onshore and offshore projects are competing for onshore transmission capacity. Views are sought on this and any other issues that might arise from the growth in offshore generation that need to be taken into account in considering access reform for the onshore transmission network.

Overview of current grid issues and arrangements

1.19. Under current grid access arrangements we have seen significant growth in connected renewable generation. Figure 1.9.1 below shows the growth in the contribution of renewable generation to total electricity generated in the UK.

Figure 1.9.1 – growth in electricity generation from renewable sources since 1990



Source: Energy White Paper 2007

1.20. This growth in network capacity for renewable generation has been accomplished under previous price control regimes for transmission and distribution companies. Furthermore in December 2004, Ofgem approved funding of around £560 million through the Transmission Investment for Renewable Generation (TIRG) mechanism for a significant programme of transmission investment to connect renewable generation. Following the Transmission Price Control Review for 2007/12, a further £4 billion has been approved for works on the GB transmission system by the three licensees during the five year period. However, this includes maintenance and replacement of existing assets, as well as the connection of new generators.

Issues

1.21. The key challenges for connecting more renewable generation are:

- The need to invest in new infrastructure in particular to connect increasing amounts of renewable generation in locations where there is no, or limited, transmission infrastructure. Gaining relevant planning consents often delays this investment;
- Delayed connection dates offered to renewable generators as a result of the number of projects under development, the need for new infrastructure and the uncertainty about which projects will actually go ahead;
- Uncertainty about when existing generators may disconnect, thereby freeing up capacity for new generators;
- Rising constraint costs in some parts of the network that may have implications for consumers;
- The need to maintain the security of supply whilst accommodating increasing contributions from intermittent generation;
- The need to adapt technical standards to take account of the particular characteristics of new generation technologies and continue to maintain the integrity of the transmission system; and
- The need to maintain continuing high levels of reliability.

2. Current Access Arrangements and Initiatives

Questions

There are no questions in this chapter.

Overview

2.1. The GB transmission system is split into three transmission licence areas which are defined as England and Wales, South of Scotland and North of Scotland. National Grid Electricity Transmission (NGET) owns the England and Wales transmission system, with Scottish Power Transmission Ltd (SPTL) owning the South of Scotland and Scottish Hydro Electric Transmission Ltd (SHETL) owning the North of Scotland. These three transmission owners (TOs) are responsible for building and maintaining safe and efficient networks and are regulated by Ofgem. NGET also has the responsibility of overseeing and managing the flow of electricity and providing the commercial interfaces with users across the whole GB transmission network, including the elements owned and operated by SPTL and SHETL. In this role, NGET is known as the GB system operator (GBSO).

2.2. The Connection and Use of System Code (CUSC) sets out the standard commercial terms between NGET and users of the GB transmission system. This is supplemented by a number of bilateral agreements, including construction agreements, which set out works required to provide a user's access rights. The CUSC uses the concepts of Connection Entry Capacity (CEC) and Transmission Entry Capacity (TEC). For generators directly connected to the transmission networks, CEC is the capability of a user's connection and defines the maximum capacity of the connection assets to which a generator is connected. TEC reflects the capability of the wider transmission system and defines the user's access rights to the transmission infrastructure, i.e. a generator can not export more than their TEC[2]. A value for CEC (if directly connected to transmission) and TEC is agreed bilaterally for each relevant generator. TEC cannot exceed CEC.

2.3. Under the current arrangements the GBSO will offer terms for connection based on an "invest then connect" approach. Applications for transmission system connection are assessed against the contractual background which includes generation projects that have a bilateral agreement with NGET but are not yet connected to the GB transmission system. The connection date offered reflects the customer's request but also the time required to complete transmission system works (connection and/or system reinforcement works). In general, connections will not be made until transmission system reinforcement works are complete. However,

[2] Unless it holds a Maxgen contract with NGET, or is directed to do so in a security period.

there have been circumstances where the GBSO has been able to agree with customers specific arrangements to facilitate an earlier connection date on a constrained basis (i.e. their access may be limited without compensation).

2.4. Generators can ask the GBSO to offer terms for connection to and/or use of the GB transmission system at any stage of their generation project (provided that sufficient data can be provided to the GBSO about the proposed development). The GBSO will detail in its offer, the works on the GB transmission system that are required to provide connection to and/or use of the GB transmission system. These works may trigger wider reinforcement works (sometimes called "deep") on the transmission system. More than one project can be dependent on a specific set of transmission system reinforcement works. This can result in a 'queue' of projects dependent on major network reinforcements such as the Beauly-Denny upgrade in Scotland.

2.5. Once a generator has entered into a contractual agreement with the GBSO it may be required to provide financial security against the transmission system reinforcement works identified in its bilateral agreement. The financial security regime ensures that consumers are protected from the risk of stranded assets if the project does not go ahead. Financial security arrangements (final sums liabilities or "FSL") have proved to be volatile when connecting groups of smaller, renewable generators. In August 2006, NGET introduced a voluntary alternative approach for financial security for new generators and those generators applying for an increase in capacity, following progress of the Access Reform Options Development Group (ARODG), a cross-governance working group chaired by Ofgem. This approach was entitled Interim Generic User Commitment and was designed by NGET to offer greater financial certainty, by basing security on either a User Commitment Amount or a Cancellation Amount should a generator terminate its connection agreement. In addition, as set out later in this chapter, there is a live CUSC amendment proposal 131 (CAP131) “User Commitment for New and Existing Generators” which as one of its main aims sets out changes to the existing FSL mechanism.

2.6. Once connected, generators can continue to use the network, subject to a rolling annual obligation to pay transmission charges. Existing users can hand back their rights at any time, with a minimum five days’ notice, and in return the obligation to pay transmission charges falls away with effect from the following April. Some generators consider that, by this mechanism, they have been conferred an enduring right. However, as indicated by Ofgem previously, it is not obvious that the industry codes provide a clear definition of the rights associated with TEC and that it may be inappropriate for TEC holders to consider they hold an enduring property right to use the transmission system.

2.7. Generators who are connected to the network can supplement their existing rights (if any) by applying for shorter term (and in some instances, less certain) access rights. These access products were designed to allow more efficient use of transmission capacity. However these access products will only be granted by NGET where capacity is available and no constraint would be created or exacerbated.

2.8. Arrangements for applying to the GBSO for connection to and use of the GB transmission system are defined in the CUSC. The CUSC framework includes processes for proposing and implementing changes to the rights and obligations within the CUSC. The changes that are currently being considered through industry governance processes are summarised from paragraph 2.17 onwards.

Delivering and Operating Infrastructure

2.9. In planning network reinforcements the transmission licensees assume that all users with contractual agreements with the GBSO will ultimately connect. A proportion of projects that have entered into contractual agreements with the GBSO are not expected to go ahead for reasons including failure to secure planning consents and other technical and commercial reasons. The transmission licensees' ability to plan and develop the GB transmission system efficiently is complicated by this lack of certainty over which projects will ultimately be consented and built. Transmission licensees need to reassess planned transmission system reinforcement works when contractual agreements are amended or terminated before the connection has been made, in order to mitigate the risk of stranded assets.

2.10. Reinforcements are planned, and the system operated, to ensure compliance with relevant technical criteria set out in the GB Security and Quality of Supply Standard (SQSS). These criteria are mostly deterministic in nature, reflecting the appropriate balance between costs of providing network assets, operating the system and maintaining a certain level of security of supply. With the substantial amount of new generation to be based on renewable sources with intermittent output pattern, there is a need to review these criteria so that required system security and operational integrity continue to be maintained with efficient investment costs. There is also a need to review the assumptions and practices underlying the system capacity that can be made available in operational timescales so that the usage of the existing network is maximised without undue risks or costs.

2.11. The transmission licensees have implemented GB SQSS governance arrangements which allow licensees and other interested parties to submit a "request for review". A review of the GB SQSS is currently underway as described later in this document.

System Balancing

2.12. Apart from ensuring energy balance (i.e. a balance between supply and demand on a second by second basis), NGET as the GBSO also has the responsibility to ensure system balance, (i.e. the transmission system remaining within its technical limits). Both are achieved through the procurement and utilisation of balancing services and actions taken to increase or reduce generation or demand in the Balancing Mechanism (BM).

2.13. A transmission constraint arises where the system is unable to transmit the power supplied to the location of demand due to congestion at one or more parts of

the transmission network. Actions taken by NGET typically involve reducing generation on one side of a constraint and increasing generation on another, keeping overall supply and demand in balance. The costs for such actions are referred to as constraints costs, which are a component of Balancing Services Use of System (BSUoS) charges and paid for by users and ultimately consumers. For illustration, the costs in 2006/07 for constraints on the transmission system in England and Wales stand at £28.6 million, compared to £24.9 million for the Cheviot (Scotland to England) border and £54.6 million within Scotland. Total constraint costs for GB in 2006/07 were £108.1 million (equating to a total contractual holding of 384 gigawatt hours (GWh) for imports and 1160GWh for exports), compared to around £80 million in 2005/06 (equating to a total contractual holding of 284GWh for imports and 907GWh for exports).

Current Activity to Improve Grid Access

Short Term Access Governance

2.14. The GB Queue describes the queue of projects, largely in Scotland, that have applied for connection to the transmission system. Over 150, mainly renewable projects, totalling around 12 GW of generating capacity, are currently seeking connection in Scotland where the network is already constrained. Many of these projects came forward at an early stage of development in order to take advantage of transitional arrangements under the British Electricity Trading and Transmission Arrangements (BETTA). In all likelihood, only a proportion of the projects currently in the queue will actually connect to the network. The most significant factor is likely to be whether the generator obtains planning consent, but other commercial and technical factors may contribute. The large majority of projects in the queue do not yet have the necessary consents.

2.15. In addressing the issues associated with the challenges in the short term, Ofgem and the industry have made progress in the following key areas:

- Contractual management - This is mainly to ensure that a more coherent set of information on demands for transmission capacity can be developed in the short term, reducing the risk of stranded assets, and that opportunities for earlier connection can be identified and taken advantage of by the most viable projects. NGET has consulted on approaches to improving the position in Scotland (although the proposals would apply to GB as a whole) and has published its conclusions on the way forward with a view to offering connection opportunities to those projects best able to make use of available capacity.[3]

[3] For more information on NGET's proposals on GB Queue management, please see the following link:
http://www.nationalgrid.com/NR/rdonlyres/47B95865-0225-45C2-B3BE-F753821B1E1B/18039/FinalConclusionpaper.pdf

- A review of system operation - Ofgem and BERR have initiated a joint working group with the transmission companies to identify areas where there may be scope for more efficiently utilising the existing network and increasing the short term availability of capacity.

- A review of the GB SQSS planning criteria - This is to ensure that the standards remain fit for purpose in a world with frequent, small increments of intermittent generation connect to the network. The transmission companies are currently analysing potential models to change the GB SQSS to accommodate intermittent generation. Once they finish the analyses and associated consultation, the transmission companies will make proposals to Ofgem for specific changes, which Ofgem will be required to consult on.

- Commercial framework developments - ARODG[4] was convened to analyse the way in which users connect to and use the transmission system, in particular from the perspective of information generation and user commitment. After the group published its report, a number of CUSC amendment proposals have been raised - this will be described in more detail in the next section. In addition, the CUSC standing group Transmission Access Standing Group (TASG) was convened on a three month timetable to assess the issues of transmission access under the CUSC arrangements, which will provide a useful input into the TAR.

2.16. In addition, NGET has recently published a final conclusions report setting out a range of options to help address some of the issues relating to the GB Queue.

CUSC Amendments

2.17. A number of CUSC amendments have recently been raised, which attempt to deal with various aspects of the access regime, and in particular the GB Queue. The process that exists in the CUSC provides a clear mechanism by which signatories can raise and proceed with proposed amendments to the arrangements. The Gas and Electricity Markets Authority (GEMA), Ofgem's governing body, is responsible for approving or rejecting proposed amendments.

2.18. There are several CUSC amendments currently being developed by the industry that relate to potential reforms to the existing access arrangements. Among these is CUSC Amendment Proposal 131 (CAP 131) "User Commitment", which proposes to reform the existing arrangements for financial securities by replacing the existing mechanism for FSL with a generic, predictable and, in aggregate, lower level of security. It also proposes to introduce a non-refundable holding fee to deter speculative applications, and increase the overall level of commitment provided by

[4] ARODG was convened and chaired by Ofgem. For more information please see Ofgem's website at www.ofgem.gov.uk.

existing generators. CAP 131 is currently with Ofgem for decision. The decision process may be complex, given its 36 permutations. The amendment has been under development since it was proposed on 30 October 2006.

2.19. "Interim TEC" (CAP143) was raised to allow connection opportunities for parties prior to wider reinforcement works being completed. Under CAP143, an Interim TEC product would afford users rights to use the transmission system in all but a specified number of periods. During these periods, the GBSO would be able to constrain off a user at zero bid price, or it would be required to declare down its output. CAP143 is due to be furnished to the Authority with the final modification report for decision in August 2007, where it will be assessed against the applicable CUSC objectives and Ofgem's statutory duties.

2.20. "Deemed Access Rights to the GB Transmission System for Renewable Generators" (CAP148) would allow a renewable generator to export onto the system without wider transmission system reinforcements needing to be in place. Because of this feature of CAP148, where there is insufficient transmission capacity, it is proposed that other non-renewable generators are constrained off the system first to enable priority access for renewable generators with a new access product, Deemed Transmission Entry Capacity (DTEC). The constraints that would be incurred as a result of taking conventional generators off the system to make way for renewable generators would be funded from Transmission Network Use of System (TNUoS) charges and not Balancing Services Use of System (BSUoS) charges, and would be based on compensation for revenue foregone. CAP148 is currently at the working group stage.

2.21. "Transmission Entry Capacity with restricted access rights" (TEC-lite) (CAP149) would formalise in the CUSC the existing arrangements whereby some users, through variations to their bilateral agreements, have restricted access to the transmission system. CAP149 would introduce a new access product "TEC-lite" for existing and new users with such restricted rights. TEC-lite would confer different rights to use the transmission system than full TEC, and on this basis, the proposer considers that transmission charges would be lower, based on certain assumptions regarding the current charging methodology. CAP149 is currently at the working group stage.

2.22. In addition to the CUSC amendments described above, there are several other live CUSC amendments that relate to transmission access.

3. Models of Access Reform

Questions

- ➔ **Question 1**: Do you consider that there is a need for change to the existing transmission access arrangements?
- ➔ **Question 2:** Do you agree with our assessment criteria?
- ➔ **Question 3:** Is the concept of sharing of transmission capacity (i.e. having less transmission capacity for a given amount of connected generation) the right approach to explore?
- ➔ **Question 4:** Do you consider that there is an issue with the property rights associated with transmission entry capacity as set out in the CUSC?
- ➔ **Question 5:** Are the transmission access models set out in this document broadly appropriate in considering how to meet the Government's medium and long-term aspirations? Are there other models that should be considered?
- ➔ **Question 6:** Are there any issues arising from the growth in offshore generation that need to be taken into account in considering access reform for the onshore transmission network?

Introduction

3.1. Transmission access arrangements can be described collectively as the regulatory and commercial framework through which current and prospective users of the transmission network obtain a connection to, and rights to use, the network.

3.2. This section sets out potential amendments to the current commercial framework in relation to how transmission rights are allocated. Respondents may wish to propose alternatives.

3.3. Several models of access reform have already been considered by TASG, under its remit as a CUSC working group. The work that has been undertaken by this group will provide valuable information for TAR. Whilst TASG is necessarily limited in its deliberations by the scope of what can be considered under the CUSC, TAR is looking at all aspects of the transmission access arrangements, and is not bound by the objectives of one industry code. A range of access models have been considered by TASG, and can be described as follows:

- TEC Transfer - arrangements to further facilitate the transfer of previously allocated transmission access rights between power stations.

- Extra TEC (ETEC) - the GBSO would identify additional transmission access available in operational timescales, which could be purchased before real time and priced ex-ante on a cost-reflective basis.

- Overrun (with ex-post pricing) - this would involve creating arrangements to allow power stations to generate above their TEC, charged on usage and priced ex-post on a cost reflective basis.

- Connect and manage - the provision of transmission access rights prior to reinforcements under the SQSS being completed. This model would charge for capacity via TNUoS.

- Wind energy model - the provision of transmission access rights prior to reinforcements under the SQSS being completed. This approach would remove cost reflective charges and would adopt a uniform or "Postage stamp" approach. Generators would be constrained off at an administered bid price.

- Firm or BM - this model is under development but entails firm and non-firm generation sharing capacity. One feature of this model would be that firm users can not be bid down in the BM, whilst non-firm would be subject to bid-offer acceptances.

- Shared TEC (subject to discussion) - TEC would be shared between two nodes. The primary party has TEC liability, and the secondary party has rights through a bilateral contract. Charges would be calculated on a cost reflective basis as a multiple of TEC.

The case for change

3.4. Whilst the current framework has led to the connection of significant amounts of generation there are some important challenges that are likely to require changes to the framework if access arrangements are to remain fit for purpose in the medium to long-term (i.e. to 2020).

3.5. Some renewable generation, particularly wind generation, is intermittent, and for large periods will not generate at full capacity. However, when its primary fuel is available, it operates at a consistent level of output with limited flexibility and needs access to the transmission system. The operating characteristics of wind generation are therefore substantially different from most other types of generation.

3.6. The expected growth in intermittent renewable generation (principally on-shore and offshore wind, but also wave and tidal generation), often in locations that currently have little or no transmission network, means that we will need to accommodate:

- Generators who do not need a constant level of transmission capacity, but who do need access when their primary fuel (e.g. wind) is available;

- Technologies that have a different impact on the system compared to conventional generation;

- Technologies in more diverse locations and whose development profile may be out of step with the time currently taken to plan and construct network reinforcement; and

- An increased need for back up generation, despite increased intermittent generation, to ensure that demand is met and that high levels of security of supply are maintained.

3.7. The purpose of TAR is primarily to identify proposals for change to the existing transmission access regime, to improve the technical, commercial and regulatory arrangements, and to provide a framework for more efficient connection to and use of the transmission system. The work that is ongoing as part of STAG focuses on immediate issues which are bound by current industry codes and commercial mechanisms, whilst TAR is to identify longer term, more fundamental changes to the existing arrangements.

Assessment Criteria

3.8. Any models for change that are considered under TAR should be assessed against a defined set of criteria, as set out below:

- Promoting social and environmental objectives. Any proposals should be consistent with Ofgem's and BERR's statutory duties, reflecting the direct impacts that the transmission systems have on the environment, as well as the role the transmission systems play in facilitating broader social and environmental objectives. Proposals should also be consistent with the Government's climate change targets and should better support accommodation of renewable generation through timely connection and appropriate access products that provide certainty for developers;

- Promotion of competition. The arrangements should promote competition between industry participants, facilitating market entry and preventing undue discrimination between classes of users;

- Efficient network development. Transmission companies should have incentives to optimise the use of existing capacity, including release of unused capacity. In addition, demands for capacity should be appropriately signalled, ensuring that transmission licensees have sufficient information to efficiently allocate and provide capacity. Licensees should be rewarded for responding dynamically to changing circumstances to develop their networks in an economic, efficient and coordinated manner;

- Appropriate allocation of risk. Risk should be allocated appropriately between transmission companies, network users and consumers, which should be reflected in the charges levied on and/or payments made to relevant parties;

- Simplicity, transparency and minimising implementation and operational costs. Access arrangements and associated incentives should form a coherent whole, recognising interactions between different aspects of transmission policy, and should be capable of being implemented as simply and transparently as practicable so as not to disadvantage any class of user. The arrangements should not impose undue implementation or administrative costs on industry participants, recognising that such costs might be expected ultimately to be passed on to consumers;

- Security of supply. The mechanisms developed should not have a negative impact on the security of supply;

- Costs to consumers. Costs that are paid by users and consumers should be appropriate and proportionate. There is a need to strike the right balance between short-term costs and long-term benefits of accommodating more renewable generation; and

- Compliance with applicable legal requirements. Including the Electricity Act, the Energy Act and relevant European law.

Models of Reform – Access

3.9. This section sets out high level models for access reform to stimulate debate. This section illustrates the models that may be explored in detail during the review and is not intended to be definitive. Respondents may wish to propose alternative approaches.

Model A - Incremental Change

Description

3.10. This model would essentially rely on the shorter-term work being undertaken by industry, as well as in the context of the STAG initiative and future proposals within the current frameworks to amend the industry codes without giving further consideration to more fundamental reform. The changes would consequently be of an incremental nature.

3.11. Although the present mechanism of invest then connect has been successful in connecting a large volume of conventional technologies, and has led to efficient system operation, it has been stretched by increasing numbers of connection applications from new renewable generation. In certain areas, the amount of generation applying to connect exceeds the transmission capacity that can be built with the desired connection timescales under the present arrangements. Delays in acquiring consents for various projects also have the potential to prevent timely connection of generation. New renewable generation currently face delay in a queue

to accessing the transmission system. The Government believes that certain aspects of the current arrangements are not helping to address its climate change targets.

3.12. The current framework does provide high levels of certainty to connected generators who, as a consequence of holding TEC, have firm rights, subject to paying the relevant transmission charges to use the transmission network. However, as indicated previously by Ofgem, it may be inappropriate to consider the rights conferred by holding TEC are evergreen.

3.13. The framework can continue to evolve, given a clear strategic direction from the Government and Ofgem, and building for example on NGET's GB Queue Management Conclusions Report. Steps that could be taken include:

- A risk-based approach to connection dates. This approach would allow NGET to recognise the attrition rate in project development and take a more active role in identifying priority connections. This would lead to more efficient network planning and earlier connection dates being offered. There is a risk that, if the amount of generation that ultimately connects is underestimated, that constraint costs will rise;
- Clarification of TEC and the rights it gives to connected parties;
- Consideration of the relationship between planning consent and the right to connect. A firm connection agreement could, for example, be made conditional on achieving consent;
- Consideration of whether the existing commitments placed on generators wishing to secure long term capacity are appropriate; and
- Development of TEC trading arrangements and mechanisms to confer short-term access as currently being considered by TASG.

3.14. In addition to the above issues relating to the access arrangements, the status quo can also be undermined by sometimes slow and rigid industry governance mechanisms. It may be appropriate to consider whether improvements could be made to the current industry governance procedures.

3.15. Whilst maintaining the status quo, one model that might be viable under the existing system is the development of an overrun product, which is discussed in more detail later in this chapter. In essence an overrun product would allow a generator the ability to generate more than its contractual TEC holding, on the basis that the costs that this would incur for the rest of the system would be targeted back onto the generator that is spilling power. There may be several ways in which this could be achieved, but it would be likely that the generator may be allowed to generate up to its CEC and be charged the Short Run Marginal Cost (SRMC) for the power it has spilled in excess of its contracted TEC. The generator may therefore take the financial decision as to whether there would be more value in purchasing TEC and adhering to its contractual holdings of capacity, or overrun above this level

and face the costs of doing so. This approach may reveal how generators value transmission access at particular times, and whilst SRMC is not intended to reflect the costs of infrastructure works, it will still provide useful signals of where and when system capacity is scarce, and therefore signal the need for network investment.

3.16. Under the incremental change model, there may also be scope to develop more mechanisms to deliver additional capacity in operational timescales. Some already exist such as Short Term TEC (STTEC) and Limited Duration TEC (LDTEC) which offer shorter term TEC packages and therefore a greater degree of flexibility than holding annual TEC. Use of these products has so far been limited. Ofgem also approved a CUSC amendment which introduced the ability to trade TEC on a temporary basis (CAP142 "Temporary TEC Exchanges"). Any further developments of capacity trading may help to free up additional capacity, closer to real time, whereby parties with intermittent generation characteristics, or those that only generate infrequently, may be able to pick up TEC for short periods of time. However, as with the existing shorter term capacity products, the system operator would likely require a degree of notice before these products could be made available to the industry, i.e. the closer to real time a generator requests capacity, the more difficult, and potentially costly it would be for the system operator to allocate the capacity. An important consideration of these trading arrangements is whether or not they provide sufficiently bankable access products.

3.17. Whilst there are measures in hand in the current short term access governance work and there are further steps that could be taken, we need to consider whether incremental change, which can take time to deliver, will put in place a coherent framework that meets the challenge of both connecting and accommodating a significantly higher penetration of renewable generation.

Model B - Connect and manage

Description

3.18. The underlying principle of connect and manage is that generators are able to use the transmission network when local connection works have been completed irrespective of whether wider network reinforcements, if required, have been made. By enabling faster connection of new generation, a “connect and manage” model could contribute in part to achievement of the government’s climate change targets but would likely result in an increase in constraint costs.

3.19. A user would be provided with firm access as soon as local infrastructure works had been completed and power could be delivered to the network. Transmission licensees would be required to manage the consequences of accommodating the additional generation, which would include an increase in constraint costs.

3.20. A connect and manage system is most likely to give access within a fixed time of signing a connection agreement or the granting of planning consent. In the event that the transmission licensee can not deliver the required infrastructure within this

fixed time it may be required to "buy back" the capacity it has not been able to connect. This approach would give a high level of certainty to developers and improve financing prospects. It would enable those parties that are able to build their project and related local works to gain access to the system and may therefore encourage projects to progress more rapidly with gaining consents and identify the most viable projects. Arguably there will be more certainty regarding the demands for transmission capacity, as all generators that have their local works completed will be entitled to use the transmission system.

3.21. From the point of connection the consequences of accommodating the generation would need to be managed by the system operator. There would be increased costs from balancing the system through constraining-off generators and contracting for reserve services, which ultimately would be paid for by consumers. The constraint costs could be significant and would need to be assessed in developing this approach. This problem may be more of an issue at certain times of the year (peak/off-peak periods), in certain places on the system (notably in Scotland). However, one way in which the costs of constraints could be allocated more fairly is by adopting cost reflective charging, whereby those parties causing constraints bear the costs of their actions.

3.22. The approach would move part of the risk of the delay or failure in acquiring planning consents for wider reinforcement works from the generation projects to transmission licensees (and ultimately the consumers). Any connect and manage system would need to ensure that there is an appropriate sharing of risks between generators and consumers. A key consideration would be the balance between additional constraint costs and the benefits of connecting more renewable generation earlier.

3.23. For connect and manage to contribute to the Government's climate change targets, it would only be effective in areas where there is only a temporary delay in a feasible network investment solution or realistic scope for managing the network to allow renewable generation to export its output to the system. For instance, it is of little benefit to the climate change targets to connect renewable generation in areas without any long term opportunity to generate, even if it receives revenue from being paid constraints costs.

3.24. In addition to potentially increasing costs and risks in system operation connect and manage models may also have implications for the application of the GB SQSS planning criteria. Providing firm access to a considerable volume of renewable generation before the completion of all relevant transmission investments is likely to give rise to a larger number of longer lasting non-compliance events against the GB SQSS planning criteria. However, this is subject to changes that may result from the review of the treatment of variable generation in the GBSQSS, and any variations in the definition of firm access for generation accommodated by connect and manage models.

Model B(i) - Connect and manage with administered constraints

3.25. A variant of connect and manage would be to strip away the generator's right to freely price its view of revenue foregone into its constraint costs in the balancing mechanism, and administer constraint prices at a particular level. This may be tailored for different types of generation plant, i.e. nuclear may cost more than CCGT given the relative operational costs and other factors associated with turning down output. This would retain the properties of pure connect and manage, but would have the arguable advantage that the constraint costs would be managed to an extent. However, administered prices imply a degree of inefficiency, as they would not be truly cost reflective. This inefficiency would need to be balanced against the overall benefit of preventing the constraint mechanism from creating escalating costs to users and consumers.

Model C - Auction Capacity

Description

3.26. A system of auctioning to allocate access rights would involve a considerable change to the current arrangements. It would involve seeing capacity treated as a commodity and sold to the highest bidder. Such a model could be based on developing a range of defined, tradable access products. These products could be based on a series of strips of capacity for particular durations, i.e. 5 yearly, annual, quarterly, monthly, weekly, daily or even half-hourly. This model may mimic the way in which power is traded on the over the counter markets and power exchanges, and could provide a useful consistency between the two regimes. Capacity auctions could work alongside the kinds of capacity trading models currently being considered by the industry, and in order to prevent hoarding could be subject to a "use it or lose it" obligation.

3.27. Auctions are generally considered to be an efficient way of allocating scarce products, revealing users' perceived value of capacity and providing useful information on price signals. A range of capacity products may lead to more efficient utilisation of the system due to better alignment between access rights and the actual usage of the network. For example, baseload generators could acquire longer term baseload products, whilst those parties that generate infrequently, such as open cycle gas turbines, or wind, could have a tailored product specifically for their operational profile.

3.28. By tailoring capacity products to the requirements of generators using the system, it can be expected that not only will the overall costs of using the system potentially be lower, but also that more efficient use can be made of existing system capacity. If a wind generator that receives RO Certificates (ROCs) subsidies wishes to acquire a particular capacity it would be competing with other generators with similar operating characteristics. Without necessarily designing incentives in favour of a particular technology, arrangements could be designed that would help

contribute to the Government's climate change targets, by making the arrangements more reflective of users' capacity requirements.

3.29. Capacity auctions could make more efficient use of the transmission system by freeing up unused capacity. Currently there is very little incentive on the user to release the TEC it is not using. If however it costs more to hold X megawatts (MW) of a TEC product for a whole year than for say six weeks, a generator who only expects to generate in a six week window has an incentive to only acquire the six week product. Therefore, XMW will be freed up for the remaining 46 weeks of the year. At present the generator would have XMW for the full year, and would not be incentivised to release what it is not using.

3.30. In a system of capacity auctions where a product goes to the highest bidder, consideration would need to be given to the relative competitive position of renewable generation and its ability to secure transmission capacity. It would not be consistent with the aims of this review for a system of capacity auctions to be developed which work to the detriment of renewable generators wishing to connect.

3.31. Capacity auctions may work under the existing mechanism of invest then connect (although they may also work under other approaches), such that auctions are held substantially ahead of time, providing a clear commitment from the user that it will be using a certain amount of capacity during a certain period. This information would be useful to help NGET operate the transmission system efficiently. However, the trade off may be that the auction rules and information provision may be complex and potentially arduous. In terms of information provision, at present the existing rules relating to reducing TEC allow a generator to reduce, including complete reduction to zero with a minimum of five days notice, although a live CUSC modification has been proposed to change this situation.

3.32. As with all models for access reform that require purchasing a capacity product, there would need to be a fundamental change in the nature of TEC (or whatever product replaces it) and a clear understanding of what rights are conferred to the holder. In addition, capacity auctions may be costly to implement, and may well require a considerable period of time to implement, during which there would be further delays to connection of renewable plant, and further constraint costs. There may also be a lengthy lead time between the auctioning of capacity and capacity being built.

3.33. There may also be issues with capacity having considerably different values in constrained zones compared to unconstrained zones. For example, in a constrained zone, market participants will see capacity is scarce and would value it more than in unconstrained zones. This may mean that revenue derived from the auctions could differ substantially from what would have been generated by TNUoS. One model for charging out transmission access products would be to look at the principles of the gas transmission regime. Ofgem sets baseline capacities for particular entry points on the system, provides a baseline capex allowance, which is then recovered from the industry via use of system charges. The baseline capacities are informed by the capacity auctions that take place ahead of time and funded by baseline allowances.

Incremental capacity above these baselines is also offered for sale by National Grid Gas National Transmission System (NGG NTS), which are funded through revenue drivers.

3.34. However the interaction between the revenues generated by capacity auctions and the charging mechanism for baseline capacity may be complicated. To illustrate, certain TNUoS charging zones are negative, which are based on the locational costs of siting generation relative to centres of demand. In the event that a generator is in a negative TNUoS zone, this model might imply that the generator should be paid to use the system rather than paying via the capacity auctions. This is part of a more general issue relating to how to deal with over and under recovery from capacity auctions relative to the regulated revenue the transmission licensees are entitled to earn under the price control.

Model C(i) - Auction capacity in constrained zones – new and existing

3.35. This model could be achieved in several different ways, and would see capacity auctioned only where it is genuinely scarce, i.e. in constrained zones. One particular issue with this approach is that the constrained areas of the network will change over time.

3.36. As with the general model of capacity auction whereby all capacity for new and existing generators across GB would be subject to auction on a regular basis, it could be perceived to be a change to the property rights surrounding existing holder of TEC. Whilst it may not be appropriate to consider that the current TEC arrangements confers an enduring property right to the holder, there may be a need either to clarify the definition of TEC or to create a new product, thereby providing a mechanism by which scarce resources could be allocated.

Model C(ii) - Auction capacity in constrained zones – incremental only

3.37. A variant of the “auction capacity in constrained zones” model could see only the incremental capacity auctioned. This would retain some of the qualities of the main model for auctioning capacity, but would create a dual model of capacity products whereby existing generation and new generation would be treated in fundamentally different manners, despite being in the same zone. This approach is unlikely to lead to the right incentives for existing generators to surrender TEC, even when and where that is appropriate, and may lead to a situation where renewable generators are competing between themselves for access.

Model C(iii) - Overrun

3.38. A further permutation of a capacity auction would be to introduce an overrun or “spill” product. Such a product may also be compatible with a connect and manage world. However, the most effective role of an overrun product may be as an enhancement of an auction or trading approach. The principal characteristics of an

overrun or spill product would be that generators could access the transmission system in excess of their capacity holding on a non-firm basis. Generators operating in excess of their capacity holding would be exposed to the consequences of their actions, i.e. the short-term cost of access.

3.39. In this model, although operation in excess of capacity holdings would be allowed, operation in excess of CEC (or its equivalent should the term be modified) would not be. In other words, output would need to be within the usual safe operating limits of a generator's connection to the transmission system.

3.40. Charges for generators spilling in excess of their capacity holding may be based on the SRMC of their actions, and could potentially be defined on a zonal basis, and calculated ex-post. The charges generators incur from spilling onto the system in excess of their access rights could be bundled into the short run BSUoS charges rather than the long run TNUoS charges. Generators spilling in excess of their TEC would not pay full TNUoS for the capacity associated with spill given it would be non-firm, and may pay a reduced rate of TNUoS, or no TNUoS at all.

3.41. A spill product has parallels with operation in the BM, not least in that there is a cash out mechanism which incentivises parties to generate in accordance with their contractual positions. However, the current arrangements assume that movements away from contractual positions are within a party's TEC holding. A spill product would see generation in excess of TEC. For a spill mechanism to be viable, interactions with the cash out mechanism would need to be considered thoroughly.

3.42. Under a connect and manage approach, overrun or spill could allow generation to gain access to the transmission system ahead of wider system infrastructure being provided. One of the issues associated with connect and manage is avoided however, as generators operating in excess of TEC would bear the full costs of their actions. These costs may have different drivers than TNUoS, and may result in over or under-recovery of revenue.

3.43. On the basis that SRMC could be accurately calculated, overrun has the advantage of exposing the true costs of using the transmission system. Whilst the constraint mechanism provides an indication of the costs of using the transmission system under stress conditions, there is the potential for it to not be fully cost reflective, for example, when generators do not accurately and dynamically update their bid and offer prices. Given investment decisions are often taken with consideration of ongoing constraints, signals of the value of short term costs of using the system are important in enabling accurate investment decisions.

3.44. Whilst overrun is unlikely to be attractive as a stand alone option to existing or newly-connecting generators (with the possible exception of low load-factor plant), it would allow generators to “optimise” their TEC holding and balance the cost of buying firm access ahead with risk of exposure to short-term marginal costs. For extremely low load factor, such as open cycle gas turbines and some forms of renewable generation, the ability to spill rather than hold firm TEC may provide an

incentive to release current and future TEC holdings, which could be used to free up capacity on the system. Whilst this may be beneficial in connecting new generation, there would be consequences for the wider operation of the transmission system, as it may imply a change in generators' utilisation patterns. In the case of there being the potential for large volumes of generation to spill onto the system at short notice, it may imply a requirement for different security standards, and potentially holding additional or a different portfolio of ancillary service contracts by the system operator.

3.45. Overrun could complement an auction/trading approach in that it would provide information to help generators decide whether or not to purchase TEC. However a potentially difficult issue would be whether an overrun mechanism would have implications for the value of TEC. It may be that in certain circumstances a generator would choose to spill onto the system rather than procuring TEC. In the event that this occurs, the GBSO may have less certainty regarding generators' intentions to flow across the system, especially if a considerable volume of generation spills rather than purchases TEC, potentially creating consequences for balancing the system. Without accurate SRMC pricing for overrunning, a larger than efficient volume of generation might opt simply to spill onto the system without capacity rights, thereby incurring costs for the rest of the industry that may not be appropriately targeted back at the generator.

4. Delivering and operating infrastructure

Questions

➔ **Question 1:** What approaches to improving the delivery of infrastructure should we consider?

➔ **Question 2:** Which operational measures are likely to improve connection prospects?

Introduction

4.1. This section deals with approaches to developing and constructing physical assets and the way in which these assets are operated. Making timely investments and maximising the use of the infrastructure that is in place are crucial to assist more renewable generation in connecting to the transmission system. The review will consider what measures may be appropriate to ensure that investment continues to be made in a timely and cost-effective manner.

Delivering infrastructure

4.2. Essential transmission infrastructure is planned and constructed to comply with the GB SQSS planning criteria on the basis of user commitment i.e. generators come forward to trigger reinforcements and need to put in place relevant financial securities.

4.3. The growth in renewable generation, due to the location and number of projects coming forward and to its different operating characteristics, raises a number of issues for this established process of delivering transmission infrastructure.

4.4. There is significant uncertainty in the precise location, size and timing of individual projects. However, there are known areas likely to be most attractive for intermittent renewable generation, for example wind, due to the quality of relevant resources. Whilst user commitment is an important principle designed to avoid stranded assets (and therefore costs to consumers) the review will consider whether there is a case for more feasibility, planning and design work ahead of user commitment which will give developers confidence in relation to available capacity, location and timing. Such costs are relatively small compared to the costs of construction.

4.5. The number of projects now applying for connection is unprecedented and is likely to grow further. This puts an inevitable strain on the resources of NGET and the Scottish TOs to plan work and provide developers with connection agreements.

As projects fall away further work is needed to ensure that the network can accommodate the remainder without over-investment.

4.6. The GB SQSS planning criteria stipulate the minimum required transmission capacity on the basis of flows from given generation and demand patterns, under a prescribed set of contingencies. The generation and demand patterns are largely based on peak demand conditions, with generation capacity scaled to match demand. Compared to conventional generation, most renewable generation tends to have lower probability of generating at full output throughout the year as well as during system peak. With a greater proportion of new generation seeking connection to the transmission network consisting of such low load factor generation, its treatment in the GB SQSS planning criteria is being reviewed. The transmission companies are carrying out analyses to establish an appropriate relationship between renewable generation capacity and required transmission capacity to better recognise relevant operating characteristics. Results from this work will be taken into account in TAR, especially in developing relevant access reform models.

4.7. In general, a change in the provision of transmission infrastructure to accommodate renewable generation may have implications for commercial aspects of access rights and use of system charges. For example, if the required transmission capacity is determined on the basis of a lower proportion of the generation capacity, and therefore less transmission capacity is built, such generators may be assigned individually a lower level of firm access rights. This could also lead to the transmission charges for such generators being levied on a lower basis. An alternative approach may be to allow low load factor generators to share capacity with other generators for aggregated firm access rights, with the expectation that the overall predictability of total generation output would be higher than with just one generator alone. Again, sharing capacity rights in this manner may imply revisions to transmission charges.

Operating infrastructure

4.8. Transmission access is limited by the availability of network capacity. The limitation governs the amount of transmission access that can be allocated in the planning stage. It also determines whether and how much the usage by parties already holding transmission access should be curtailed in the operational stage, either through market mechanisms or other operational measures. The available transmission capacity is ultimately governed by what can be achieved in operational timescales.

4.9. Significant amounts of renewable generation are at present, and will in the future be located in areas currently facing shortage of transmission capacity. Any improvements in system operation leading to increased transmission capability will contribute towards fast and efficient accommodation of such new generation. There is a strong case therefore to examine ways to maximise achievable transmission capability in real time operation of the transmission system, and more appropriate linkage with limits used in planning. For example, intertripping schemes may provide the GBSO with tools to reduce the output of a generation or remove it from

the transmission system following a system fault, thereby providing additional operational flexibility. More extensive use of such schemes, either system to generator schemes specified in a construction agreement for new generation, or ad hoc commercial schemes may help the GBSO to squeeze additional generation from existing transmission capacity. This may help more renewable generation connect to the system, and may help to manage transmission constraints. There may be other innovative approaches to system operation that can help free up additional generation capacity, such as alternative ways of managing transmission system failure risk, which have not yet been formally identified. TAR will provide the appropriate forum in which such measures can be identified and discussed.

4.10. Ofgem has already initiated work with the transmission licensees to review assumptions and practices currently adopted in GB transmission system operation. The review will examine the factors that limit operational system capability and the scope for changes to these limitations. In considering the potential changes to such limits, this review will take account of best practice used by the TOs and the system operator, as well as the potential for innovative approaches to system management. It is also important to balance the benefit of increased usage of the network against any potential adverse impacts, in terms of costs and risks, along with any mitigating measures. This review is aimed at identifying not only short term measures that could be immediately implemented, but also approaches that can be adopted in the longer term.

5. Incentivising efficient use of transmission capacity

Questions

➔ **Question 1:** What changes to the constraint mechanism may be needed to create incentives for timely connection and disconnection from the transmission network and to sharpen investment signals?

The constraint mechanism

5.1. Constraint payments made through the BM feed through into users' BSUoS charges, and are ultimately paid by the consumer. The level of such payments is an important driver in determining the amount of capacity that should be made available and the standards to which reinforcements are made. Any model of access reform will need to take into account the resulting costs to consumers that may arise from changes to incentives to invest and constraint costs.

5.2. The decision by the transmission licensees to invest in system reinforcement is largely taken by comparing the costs of such investment with the status quo. In the GBSQSS, there are minimum criteria to which the transmission licensees are required to build their systems. Over and above this level, there is an economic test which compares the costs of new investment with ongoing operational costs without this investment. A major factor in determining what the ongoing operational costs would be is the costs of constraints. For the development of an efficient transmission system, it is important to ensure that the signals being provided by the constraint mechanism are cost reflective and are not distorted.

5.3. The mechanisms for managing constraints need to ensure that the right incentives are in place to connect sufficient generation to meet peak demand without creating incentives to stay connected longer than ordinarily justified by the age of plant, costs of generation and environmental considerations. Where constraint mechanisms are not cost reflective, there may be incentives for market participants to remain on the system to benefit from an ongoing, predictable system constraint. The constraint payments that a generator may receive in this circumstance serves as an additional revenue stream and blocks transmission capacity that might otherwise be available to newly connecting generation.

5.4. At present the price a market participant is able to attain for being constrained off and on is only limited by the technical capabilities of the settlement systems, which makes provision for bid and offer prices between +/-£99,999.99999/megawatt hour (MWh). It is therefore possible that market participants can use the BM to signal inflexibility, rather than the true costs of increasing or decreasing output.

5.5. The review will consider whether the current basis on which constraint costs are arrived at will remain fit for purpose and whether changes need to be made in order to incentivise the timely connection and disconnection of generating capacity.

6. Way forward

6.1. Ofgem and BERR would like to hear the views of interested parties in relation to any of the issues set out in this document. Respondents are invited to comment on the following questions:

Questions

Chapter 3

➔ **Question 1:** Do you consider that there is a need for change to the existing transmission access arrangements?

➔ **Question 2:** Do you agree with our assessment criteria?

➔ **Question 3:** Is the concept of sharing of transmission capacity (i.e. having less transmission capacity for a given amount of connected generation) the right approach to explore?

➔ **Question 4:** Do you consider that there is an issue with the property rights associated with TEC as set out in the CUSC?

➔ **Question 5:** Are the transmission access models set out in this document broadly appropriate in considering how to meet the Government's medium and long-term aspirations? Are there other models that should be considered?

➔ **Question 6:** Are there any issues arising from the growth in offshore generation that need to be taken into account in considering access reform for the onshore transmission network?

Chapter 4

➔ **Question 1:** What approaches to improving the delivery of infrastructure should we consider?

➔ **Question 2:** Which operational measures are likely to improve connection prospects?

Chapter 5

➔ **Question 1:** What changes to the constraint mechanism may be needed to create incentives for timely connection and disconnection from the transmission network and to sharpen investment signals?

6.2. Ofgem and BERR are proposing that work will be taken forward in conjunction with industry via workshops or seminars, the timings of which are yet to be decided, to seek views and present issues for consideration. These will be supported as

appropriate with ad hoc industry meetings. We also expect to convene expert groups which will be tasked with assisting in considering the more detailed issues as and when they arise.

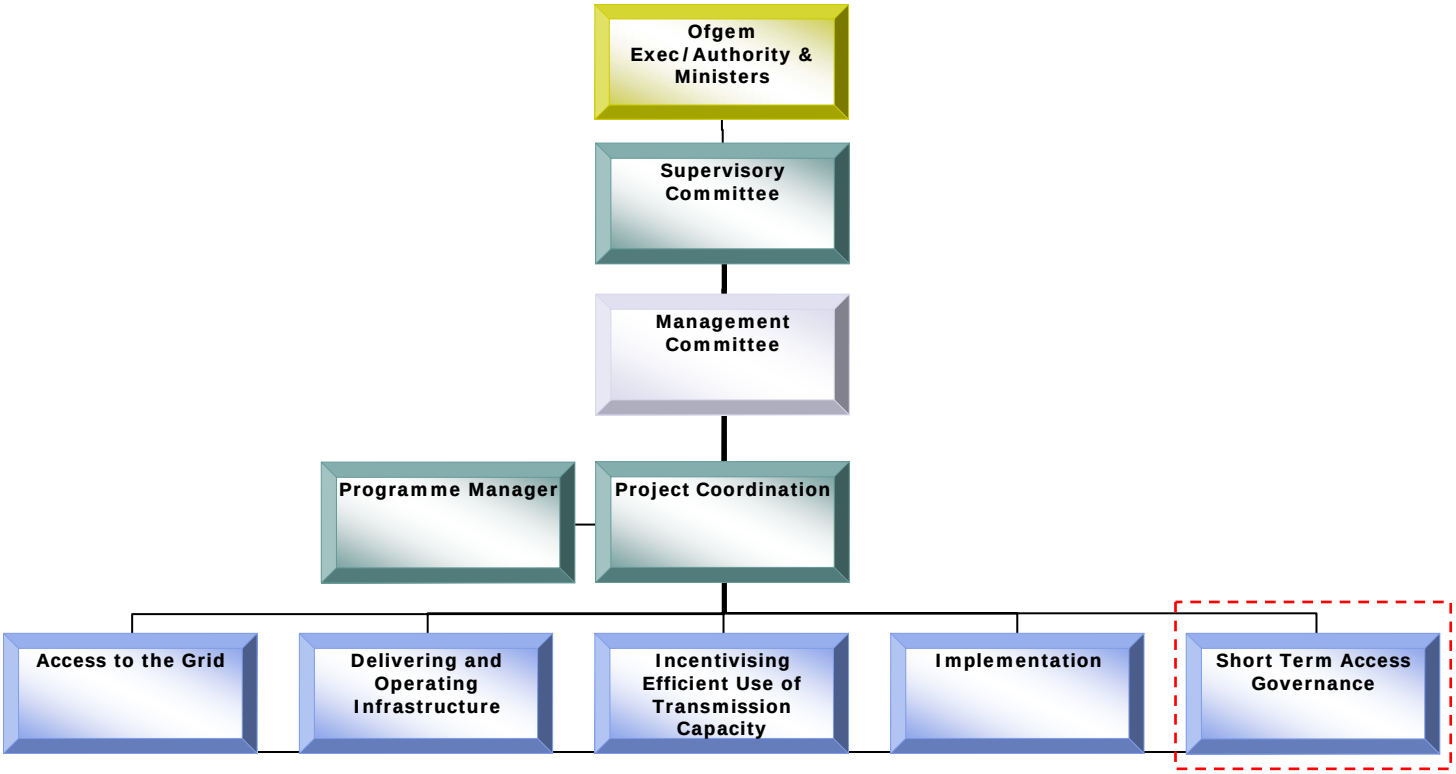
6.3. Invitations to workshops and seminars will be issued by letter following the publication of this document. It is expected that these meetings will take place in Ofgem or BERR's offices in London as appropriate.

6.4. As set out in the terms of reference appended to this document there are four key workstrands.

TAR organisation

6.5. Ofgem and BERR are committed to working as openly and as effectively as is possible with industry and other interested parties. A TAR Project Coordination group was established shortly after publication of the Energy White Paper in May 2007, comprised of staff from Ofgem and BERR. This group meets regularly to discuss project progress, work stream status and potential risks and issues.

6.6. In addition, a joint Supervisory Committee has also been convened with senior management from both Ofgem and BERR represented. This group provides a project assurance role for the Management Committee, which is responsible for project delivery and comprises of director level staff at Ofgem and BERR. We have structured the project by work stream, with the project organisation chart shown below.



Appendices

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Appendix 1 - 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.[5]

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 accordingly[6].

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;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them[7]; and

[5] Entitled "Gas Supply" and "Electricity Supply" respectively.
[6] 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.
[7] 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.

- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[8]

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 licensed[9] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- 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;
- Contribute to the achievement of sustainable development; 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 Regulation[10] 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.

[8] The Authority may have regard to other descriptions of consumers.
[9] Or persons authorised by exemptions to carry on any activity.
[10] Council Regulation (EC) 1/2003

Appendix 2 - Government Energy Policy

1.1. Energy is a vital part of every aspect of modern life in Great Britain and for our continued economic prosperity. The Government has set four long-term goals for energy policy:

- To put the UK on a path to cut our carbon dioxide emissions by some 60% by about 2050, with real progress by 2020;
- To maintain reliable energy supplies;
- To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and
- To ensure that every home is adequately and affordably heated.

1.2. The Energy White Paper 2007 set out the Government's international and domestic energy strategy to meet the long-term challenges we face in addressing climate change and ensuring security of energy supplies.

1.3. Renewable energy is an integral part of the Government's strategy for reducing carbon emissions as renewable energy resources produce very little carbon or other greenhouse gases. Renewables can also make a contribution to security of supply, by diversifying the electricity mix and reducing the need for energy imports.

1.4. Recognising the potential benefits of renewables to the UK's energy objectives, in 2002 the Government introduced the Renewable Obligation (RO) to drive and support the growth of renewables generation. The Obligation allows generally higher cost renewable electricity generation to compete directly with conventional, fossil fuel based electricity generation[11]. The Government further underlined its commitment to renewables by setting a challenging target of increasing renewable electricity generation to 10% of electricity by 2010. It also set out an aspiration to double this by 2020.

1.5. To reach our aspiration of 20% of electricity supplied from renewable generation by 2020, approximately 20GW of renewable capacity would need to be connected to the GB transmission system. Our aim is to connect new renewable generating capacity to the electricity network as quickly and as cost-effectively as possible. The

[11] A fuller explanation of the Renewables Obligation is set out in Box 5.3.2 and at http://www2.dti.gov.uk/energy/sources/renewables/policy/obligation/page15630.html

majority of the new renewable generation is likely to be variable onshore and offshore wind. In the longer term, this implies the need for an electricity transmission system that does not attempt to accommodate all generation simultaneously, but where transmission access is shared amongst different forms of generation. Such a system would mean that the transmission system could accommodate an increased amount of generating capacity for a given amount of transmission capacity. The current technical, commercial and regulatory framework for transmission access will need to change to facilitate the cost effective integration of more diverse generation technologies into the electricity system.

Appendix 3 - Call for Evidence Response

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

1.2. Responses should be received by 27 September 2007 and should be sent to:

David Hunt
Senior Manager – Electricity Transmission Policy
Office of Gas and Electricity Markets
9 Millbank
London
SW1P 3GE

e-mail: transmissionaccessreview@ofgem.gov.uk

And copied to:

Phil Hicken
Assistant Director
Renewables Deployment Team
BERR
1 Victoria Street
London
SW1H 0ET

e-mail: transmission-access-review@berr.gsi.gov.uk

1.3. 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.

1.4. 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.

1.5. Next steps: Having considered the responses to this Call for Evidence, it is Ofgem and BERR's intention to convene an industry meeting to provide an update on views expressed by respondents. Any questions on this document should, in the first instance, be directed to David Hunt (e-mail: david.hunt@ofgem.gov.uk, telephone 020 7901 7429), Phil Hicken (e-mail: phil.hicken@berr.gsi.gov.uk, telephone 0207

215 3936), or Phil Baker (e-mail: phil.baker@berr.gsi.gov.uk, telephone 020 7215 2675).

1.6. During the review we will be holding a number of events. Workshops for interested parties will be held in the autumn, and details of these events will be made available shortly.

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. NGET 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 NGET in respect of the activities it undertakes to keep the transmission system in electrical balance at all time.

C

Clustering

Clustering is the process adopted by NGET to identify and undertake reinforcements which impact one or more Users, where consideration is given to groups of generators not individuals

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 NGET is 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, consents 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. Inevitably proposals for a new line will be subject to a public inquiry. It is possible that recent changes in the regulations governing the conduct of inquiry in England and Wales may assist the process by reducing the requirement to justify the need for the line. Whether or not this proves to be the case, site specific issues such as those raised by statutory consultees (including local planning authorities, English Nature, English Heritage or the Environment Agency) or local residents take up a great deal of time at any inquiry. It is unlikely that any reduction on time spent justifying the need for the line will have a significant impact on the overall duration of the process.

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 compulsory 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). Both the Compulsory Purchase Order process and the Necessary Wayleave process can take a significant amount of time.

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 NGET assesses applications for connection and use of system. The contracted background includes all users that have entered into an (ongoing) agreement with NGET 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.

Department for Business, Enterprise and Regulatory Reform

The Department brings together functions from the former Department of Trade and Industry, including responsibilities for productivity, business relations, energy, competition and consumers, with the Better Regulation Executive (BRE), previously part of the Cabinet Office. The Department leads on making sustainable improvements in the economic performance of the regions. It is jointly responsible, with DfID and the FCO respectively, for trade policy; and trade promotion and inward investment.

Distributed Generation

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

E

Evergreen

In the context of access rights, evergreen relates to access rights that do not have a finite end date.

F

Final Sums Liabilities (FSL)

The calculation of securities required for Users for their own works and for works that they will share with other Users.

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. NGET 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.

I

Interruptible Products

Products which allow NGET to remove the right to generate prior to a given point at zero (or a reduced) cost.

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

Limited Duration Transmission Entry Capacity (LDTEC)

LDTEC is a firm capacity product, which is provided within the financial year. It can provide access for a maximum of one financial year, and does not confer additional rights beyond the end point of the product. The availability of LDTEC would be assessed against operational criteria according to a pre-defined timetable that would provide access within three weeks from NGET's receipt of an application.

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. NGET 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. NGET 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 NGET to recover the costs of providing and maintaining the assets that constitute the GB transmission system.

Appendix 5 – TAR Terms of Reference

1. Purpose of the Review

1.1 To review the present technical, commercial and regulatory framework for the delivery of new transmission infrastructure and the management of the grid to ensure that they remain fit for purpose as the proportion of renewable generation on the system grows.

2. Objectives of the Review

2.1 The review will set out proposals for changes to the framework which will better support the connection of renewable generation to the grid in the medium and long-term. The review will look ahead to 2020 and consider ways to support the delivery of the government's aspiration of 20% of electricity supplied by renewable generation and any targets that may be agreed at European Union level. These proposals will need to be consistent with the government's energy policy goals:

- To put the UK on a path to cut our carbon dioxide emissions by some 60% by about 2050, with real progress by 2020;
- To maintain reliable energy supplies;
- To promote competitive energy markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity;
- To ensure that every home is adequately and affordably heated.

2.2 The proposals arising from the review will also be consistent with better regulation agenda and recognise the duties of Ofgem as the independent economic energy regulator and its primary duty to protect the interests of electricity and gas consumers. OFGEM also has a duty under the Energy Act 2004 to contribute to sustainable development.

3. Background

3.1 In the 2007 Energy White Paper the Government announced a review led by Ofgem and DTI of the framework for connecting renewable generation to the grid. The review will examine the technical, commercial and regulatory arrangements through which new renewable generation is connected to the grid.

3.2 Developers have become increasingly concerned about the difficulties of getting grid access. Projects have been delayed due to connection issues. This is mainly due to the time needed to build new transmission infrastructure which results in parts of the network having physical access constraints, but also due to the industry commercial rules which do not currently offer sufficiently flexible, bankable

access products to allow developers to commission with a less than firm grid connection offer.

3.3 Market participants have worked hard to find solutions within the current framework, but the challenges are likely to grow. It is likely, as projects move through the planning process, that grid connection could become an increasingly important barrier to the deployment of renewable generation.

3.5 The review has been established because in the view of the Government and Ofgem the expected changing profile of electricity generation, in particular the increasing proportion of variable renewable generation, means that the current framework will need to change. Meeting the Government's aspiration of 20% of electricity supplied by renewable generation implies connecting c. 20GW of renewable capacity (much of it off-shore and onshore wind). This implies that an increased plant margin could be required if the current high levels of system security are to be maintained. It also implies the need for shared transmission access which will allow more generating capacity to be connected for a given amount of transmission capacity if we are going to meet our targets whilst maintaining security of supply.

4. Scope of the Review

4.1 The review will consider the arrangements for planning new grid infrastructure, the technical standards used to determine the need for reinforcements, the operational standards , the scope for innovation in grid operation and infrastructure and the commercial arrangements for access to the grid and system balancing. There are complex interactions between each of these issues. Whilst the focus of the review will necessarily be on the arrangements for generators wishing to access the transmission system, it should also recognise the offsetting effect from the demand side together with the impact of distributed generation. The review will need to recommend the overall framework that best delivers the connection of renewable generation taking into account the potential for reduced carbon emissions, cost to the consumer and the impact on security of supply.

4.2 Key lines of enquiry are expected to include the following:

a. Access to the Grid

4.3 As set out in the Energy White Paper, a programme of work (mainly led by National Grid) is already underway under current industry governance arrangements to deliver improved renewable generation access arrangements in the short term. This will be known as the Short Term Access Governance (STAG) workstream, comprising:

- Contract management and enforcement
- System Planning
- Review of operational measures by an Ofgem chaired Group (the 'Transmission System Operation Review Group')

- Commercial issues and CUSC modifications

4.4 Ofgem will report on progress in this area in September 2007.

4.5 However, the Government and Ofgem believe that the changing profile of GB generating capacity and constraints in the transmission network implies that, in the longer term, there will be a need to share transmission capacity between different forms of generation. This longer term review should consider:

4.6 Appropriate commercial mechanisms for allocating transmission capacity, including sharing transmission capacity, especially where it becomes constrained. The review should consider the options available including connect and manage, capacity allocation methods (including auctions), the place of long and short term trading of transmission access rights and the possible need for a product that allows operation in excess of access rights.

- How transmission access rights should best be defined for the purpose of such proposed commercial mechanisms.

- The findings from Ofgem's analysis of the progress being made to improve access under existing industry governance arrangements (STAG workstream).

- Whether proposed commercial arrangements will support accelerated deployment of renewable generation and provide bankable access arrangements.

- Whether proposed commercial arrangements will unduly discriminate between generators, and how they may impact security of supply, competitive energy markets, and economic and efficient network operation.

b. Delivering and Operating Infrastructure

4.7 There is a need for significant infrastructure in certain parts of the GB system, to connect new renewable (and other) generation capacity. The review should consider:

- Whether the current basis on which infrastructure is planned and operated will deliver the most timely and efficient outcome, in particular in meeting the challenges of developing infrastructure in more remote locations.

- How to exploit innovative solutions, now and in the future, in order to improve connection opportunities. This may be in the type of infrastructure deployed or the operation of the network e.g. through enhanced control systems.

c. Incentivising efficient use of transmission capacity

4.8 The mechanisms for managing constraints need to ensure that the right incentives are in place to connect sufficient generation to meet peak demand without creating incentives to stay connected longer than ordinarily justified by the age of

plant, costs of generation etc., thereby blocking transmission capacity that might otherwise be available to newly connecting generation.

4.9 The review should consider:

- The role constraint costs play in the transmission system. Constraint costs partly drive estimates of the level of reinforcements required on the network.

- The extent to which the existing mechanisms for managing constraints through system and energy balancing arrangements remain appropriate in incentivising the timely connection (and disconnection) of generation. This is an important part of the longer term vision of having a flexible system so that when electricity generated from renewable sources is available (e.g. when the wind is blowing) it can efficiently and cost effectively replace electricity from higher carbon forms of generation.

d. Implementation

4.10 The review should identify the implementation route for delivery of its conclusions. This will include a review of relevant industry governance arrangements to ensure that they continue to deliver timely, strategically-driven changes to the framework for access to the grid that are consistent with the evolving UK electricity generation mix.

5. Out of scope

5.1 All the following issues are currently being taken forward. They are out of scope, but will provide important context for the review.

- The planning system. Actions in the Planning White Paper and Energy White Paper are addressing this issue.

- The GB queue of projects. NGET are taking this issue forward.

- Solutions to grid access currently under development in industry governance bodies.

6. Deliverables

6.1 Ofgem will report to GEMA and the Secretary of State for Trade and Industry on the programme of work currently being undertaken under existing industry governance arrangements (STAG workstream) by September 2007.

6.2 The review team will report to the Secretary of State for Trade & Industry and GEMA as follows:

- An interim report on Transmission Access Reform (TAR) by December 2007 setting out progress and identifying any areas where the review believes that changes in primary and secondary legislation may be appropriate.

- A final report by May 2008

Appendix 6 - NGET's GB Queue Management Initiatives

1.1. NGET has recently published its final conclusions report on GB Queue management, identifying the steps it proposes to take to address the problem. The report sets out numerous issues and identifies a number of initiatives and next steps. NGET considers that whilst these steps may not seem particularly significant when taken individually, the combination of measures will be beneficial in assisting with management of the queue and hence connecting new generation.

1.2. Whilst the consultation process NGET has adopted looks at numerous actions and initiatives, they fall into four main areas, as set out below:

Obtaining Earlier Connection

1.3. The current connection approach of "first come, first served" may not result in the most efficient use of the system, or maximise facilitation of competition in an environment where there is limited capacity. NGET has therefore concluded that where opportunities for an earlier connection date arise then these should be allocated based on ability to use the system soonest. This approach is expected to maximise use of transmission system assets already in place and facilitates competition (although the cost of operating the transmission system could increase in the near term). NGET intends to now develop a separate detailed methodology for publication targeted for September 2007.

1.4. It is expected the approach adopted will provide equal opportunities for projects to advance irrespective of initial queue position, effective date of agreement and contract type. This process for providing earlier connections is premised on capacity being made available. NGET believes that such capacity will come about as a result of a combination of initiatives that it is currently progressing.

Contract Management

1.5. A number of contract management areas have been identified where, going forward, NGET considers that it will take a more active approach to contract management. This active contract management includes improved and regular communications from both sides including quarterly reporting and milestone management. For those projects that do not meet their contractual commitments, including failing to obtain the appropriate planning consent, NGET intends to take a more robust approach. NGET anticipates that this will have the effect of substantially slipping the connection dates of some projects or ultimately leading to them terminating some projects, thereby providing opportunities for others (e.g. those that have consent) to obtain earlier connection dates.

Information Provision

1.6. The provision of timely and accurate information is a key requirement for developers to make important decisions regarding their projects. NGET is seeking to provide this information where it is of value to developers and where it does not place an undue burden on transmission licensees. NGET has requested that the relevant transmission licensees review their current contractual programme milestones in light of comments received by developers. NGET has also requested that the transmission licensees provide up to date programme milestones to complement the date slippages notified in December 2006.

1.7. The relevant Transmission Licensees are currently looking at these developments but it is unlikely that complete information will be fully available until September 2007. This provision of additional information has already begun with the implementation of CAP145 "Embedded Generator MW Register", and the up to date publication of Embedded Large Power Stations, Relevant Medium, and Relevant Small Power Stations. NGET has also raised CAP151 "Construction Agreements Works Register" which proposes to enable it to publish the works required to connect a developer as set out in the relevant construction agreements (CONSAGs).

1.8. In addition, NGET is trying to link its data with other industry sources to give an overview picture in a single location. NGET is currently assessing what information is required to give a clear indication of the sequential nature of system reinforcements, the capacity they release, and how the contracted position changes over time. NGET is currently seeking industry views as to what would be the most effective way of achieving this. NGET anticipates that some of the framework changes may need to be taken forward via proposed CUSC amendments. These are expected to include publication of more information on projects and associated transmission reinforcements and providing NGET with the ability to reduce a customer's access rights where, for example, their planning consent is less than the contracted capacity.

Developments to Transmission Access

1.9. TASG has been re-constituted with the remit of examining:

- short term access arrangements
- access trading arrangements
- development of a "Spill" product to allow projects to connect and operate without enduring access rights

1.10. These areas are being developed over a 3 month period to identify workable models following which formal changes to the current industry frameworks could then be proposed. TASG is scheduled to produce a working group report in August 2007, which will be useful information for the TAR process.

1.11. The inclusion of what has been termed a “risk based approach” to release more capacity than the system has available was also considered by TASG. However following discussion with NGET, Ofgem and BERR consider that this approach may be better suited to consideration as part of the longer term access work under the TAR project. NGET therefore does not intend to pursue this issue further via TASG.