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Short Term Access Governance (STAG) Report

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Target audience: Secretary of State, Scottish Executive, Transmission Owners, System Operators, Generators, Developers and other interested parties.

Overview:

The government has established clear targets for electricity generated from renewable sources. The subsidy it has put in place, in the form of the Renewables Obligation Order, has been very successful in attracting interest and investment in renewable generation, particularly wind generation. This in turn has created a major increase in the demand for access to the transmission network.

Ofgem has taken steps to ensure that funding is available for the extension and strengthening of the transmission network. However, planning delays, both for renewable projects themselves and for transmission investment, combined with the scale of the physical work required has led to substantial delays in connection of new projects.

In the Energy White Paper 2007, the government asked Ofgem to report on the steps being taken in the short term to improve the position. This document represents our assessment of the current position.

Contact name and details:

David Hunt, Senior Manager – Electricity Transmission Policy

Tel: 020 7901 7429

Email: david.hunt@ofgem.gov.uk

Team: Electricity Policy and Compliance

Context

The success of the Renewables Obligation Order 2002 in attracting investment in renewable generation, combined with the need for new conventional generation to replace older plant and meet rising demand, has led to a major increase in the demand for access to the electricity transmission network. Funding has been made available for the necessary extension and strengthening of the network but a combination of planning delay and the scale of investment required means that some generation projects are facing substantial delays before they can connect.

In the Energy White Paper in May 2007, Ofgem and BERR were requested to assess the underlying transmission access arrangements which provide the framework for connecting new generation, and identify potential improvements to the regime both in the short term and long term regime. Ofgem and BERR have worked with industry to help identify a range of short term initiatives which could help address the problems associated with the GB Queue of generation. The progress of these short term initiatives and further areas worthy of exploration are the focus of this document, the Short Term Access Governance (STAG) report from Ofgem to the Secretary of State. Running parallel to this process is the Transmission Access Review which considers the broader, more substantial issues of transmission access in the longer term.

Associated Documents

Transmission Access Review - A Call for Evidence for a Review of Transmission Access:
http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/tar/Documents1/070816_Ex_TAR%20Call%20for%20Evidence_FINAL.pdf

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

Transmission System Operation Review Group (TSORG) – Final Report. August 2007.
http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/tar/Pages/Traccrw.aspx

Transmission Access Standing Group (TASG) – Standing Group Report. August 2007.
http://www.nationalgrid.com/NR/rdonlyres/4C0DE54C-D268-4420-9432-21F44E3E3F21/19753/TASGReportV10.pdf

Table of Contents

Summary

To help achieve the government's climate change goals, the Renewables Obligation Order (RO Order) was introduced in 2002, requiring energy suppliers to source an annually increasing percentage of their needs from renewable sources or pay a buy-out price. This provided a strong incentive to invest in renewable generation and, between 2002 and 2005, there was an increase in renewable generation in Great Britain, particularly from wind farms. The introduction of the British Electricity Trading and Transmission Arrangements (BETTA) in 2005 was perceived to provide an incentive to connect by a fixed date in order to take advantage of the transitional arrangements. This led to a further surge in activity in Scotland, where around 12 GW of renewable generation applied for connection to the system in Scotland.

Interest in renewable generation is not restricted to Scotland. Significant volumes of renewable generation are under development or under consideration in England & Wales and the development of an offshore regime for generation and transmission will allow the development of substantial renewable generation capacity in offshore waters. There is also substantial interest in new conventional generation to replace older plant and to meet rising demand. With around 12GW of generation waiting to connect in Scotland, around 9GW in Wales, plus an anticipated further wave of gas, nuclear and offshore wind connections, around 45GW of new generation is expected to connect before 2020. This compares to around 77GW of installed capacity at present in GB.

These developments are placing unprecedented new demands on the transmission system, which needs to be extended and strengthened to cope. Ofgem has taken steps to ensure that funding is available for this through the Transmission Investment for Renewable Generation initiative (TIRG) in 2004 and through the subsequent Transmission Price Control Review (TPCR). However, planning delays, both for renewable projects themselves and for transmission investment, combined with the scale of the physical work required has led to substantial delays in connection of new projects, and what has become known as the “GB Queue”.

Historically, the transmission system has been planned and developed using a system of "invest then connect", which means that if the connection of a new generator leads to the need for investment in the wider network, the generator is not allowed to export power onto the system until this reinforcement work is complete. As a consequence, there can be circumstances where generators are physically able to export onto the system, but delays to wider reinforcements prevent them from doing so. In these circumstances, pending completion of network reinforcement, it is important to ensure that maximum use is being made of the existing network capacity to enable faster connection of renewables and that the arrangements for access to this capacity are fair.

In the Energy White Paper in May 2007, Ofgem and BERR were requested to assess the arrangements for transmission access and identify potential improvements to the regime both in the short term and long term regime. This work is being taken forward through two workstreams: the Short Term Access Governance (STAG) Review which is examining the steps being taken to optimise access to the network in the short term, and the Transmission Access Review (TAR) which is considering whether more substantial reform of the access arrangements is required in the longer term.

This document represents Ofgem's report to the Secretary of State on the progress that has been made by the STAG workstreams, and provides our view of further areas that could be explored. The areas described in this report include:

- GB Queue management initiatives, related to contractual arrangements between the GBSO and users;
- Commercial framework development, relating primarily to work brought forward under the industry code processes;
- Review of system operation, which has the potential to identify alternative means of managing the system in operational timeframes to potentially free up capacity, and
- Review of the GB Security and Quality of Supply Standards (GBSQSS), which looks at whether the existing planning and operational criteria remain appropriate going forward.

Progress has been made in each of the above areas, as detailed in subsequent chapters, but we have identified further questions which need to be explored and addressed. We believe the work that has already been undertaken by NGET could usefully go further to ensure that the information in relation to network capability, as well as generators in the GB Queue, is as accurate as possible and provides useful signals as to the investments needed to accommodate generation efficiently. We also feel that improvements in the accuracy of projects in the queue could help to flush out unviable projects that could potentially be delaying otherwise viable generators from connecting. However we feel that more substantial changes can be achieved from exploring the planning and operational criteria.

With regards to system operation measures, we feel that whilst the remit of the Transmission System Operation Review Group (TSORG) has been fulfilled, there are some additional steps that could be taken. In particular we note that the terms of reference for the group did not explicitly look at any of the system management tools from a cost-benefit analysis perspective. We feel that this is an important next step to help inform debates on transmission access, and identify the validity of some of the techniques that have been identified and discussed by the group.

The GBSQSS currently contains deterministic rules defining the minimum level of transmission capability required for a given generation and demand background. For a given transmission network and existing generation and demand, applying such rules would also determine the amount of new generation that can be accommodated at a certain location. Against the unprecedented growth in potential new generation, in particular intermittent generation, questions have been raised whether such rules are still fit for purpose. We note that work is being carried out in reviewing the treatment of intermittent generation in the GBSQSS, which is expected to establish more appropriate links between generation capacity and required transmission capability. We also note that there are clear areas of interaction between onshore GBSQSS and the work that has been progressed as part of Ofgem and BERR's offshore transmission GBSQSS sub-group. We consider that there is potential for useful work to come out of this review process, and would welcome efforts to expedite the process.

1. Introduction

The Energy White Paper

1.1. Following publication of the Government's Energy White Paper in May 2007, Ofgem and BERR were requested to assess the underlying transmission access arrangements which provide the framework for connecting new renewable generation, and identify potential improvements to the regime both in the short and long term. The Energy White Paper identified:

- The need to manage more efficiently the queue of developers waiting for grid connection;
- The need for reform to the arrangements for access of renewable generation to the grid, and
- Ensuring the technical standards do not disproportionately burden renewable generators.

1.2. The White Paper also requested that Ofgem reports to the Secretary of State in on the following short term areas of work identified below;

- Contractual management (GB Queue management initiatives);
- Commercial framework development;
- A review of system operation, and
- A review of the planning standards.

1.3. These workstreams were identified as key in addressing the delays faced by renewable generators in securing transmission network capacity in the short term.

1.4. In accordance with the request in the Energy White Paper, the purpose of this paper is to describe the areas of the current arrangements that are currently being explored, what the progress to date has been and what further areas of work are needed. These proposed reforms are based on using the existing access arrangements as a baseline for change and are concerned with shorter term changes, rather than a more fundamental longer term review of the transmission access arrangements.

Transmission Access Review

1.5. In addition to the work detailed in this document, which has become known as Short Term Access Governance (STAG) review, Ofgem and BERR have also been requested to look at the more fundamental challenges facing the transmission access

arrangements in order to help government achieve its climate change goals. The longer term work is being taken forward by Ofgem and BERR under the Transmission Access Review (TAR). The TAR seeks to assess 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.

1.6. This project is substantial and vital for ensuring that appropriate steps are taken to help remove existing barriers to entry inherent in the transmission access arrangements. However, the project is very challenging, both in terms of the volume and potential complexity of the work involved as well as the limited time in which the project is to be completed. The key deliverable for the TAR project is a final recommendations document to be published in May 2008[1].

[1] For more information on the TAR work, please see the following link: http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/tar/Pages/Traccrw.aspx

2. Background

Transmission access arrangements

2.1. 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, which was designed to ensure that all forms of new generating capacity were able to receive connections offers.

2.2. However, in recent years, government's energy policy has altered the incentives on parties to develop projects, and therefore the nature of connection applications. To help achieve the government's climate change goals, the Renewables Obligation Order (RO Order) was introduced in 2002, which required energy suppliers to source an annually increasing percentage of their needs from renewable sources or pay a buy-out price. This provided a strong incentive to invest in renewable generation. As a result, between 2002 and 2005 there was an increase in the amount of renewable generation seeking connection in Great Britain. When the British Electricity Trading and Transmission Arrangements (BETTA) were introduced in 2005 greater market opportunities for selling power were created. In addition, the transitional arrangements under BETTA were favourable for new generation connections in Scotland. The combination of the sharpened financial incentives on renewable generators and the transitional arrangements resulted in a further wave of renewable generation connection applications.

2.3. Scotland currently has considerably more generation than is needed within the country, and exports a large proportion of its electricity into England and Wales. Because of this overall geographical disposition of generation and demand, with increasing volumes of generation being sited in the north and demand heavily concentrated in the south of England, the flow of electricity is largely north to south. This profile means that connections in Scotland have the potential to trigger reinforcements not only within Scotland but all the way down to the major supply hubs in southern England.

2.4. In December 2004, responding to the wave of new renewable generation connection applications, Ofgem published its proposals for providing funding for investment in transmission capacity to meet this demand2. This provided funding for £560 million of investment to connect additional renewable generation in Scotland, and to reinforce the transmission system to accommodate flows from Scotland to England. More recently, Ofgem's Transmission Price Control Review

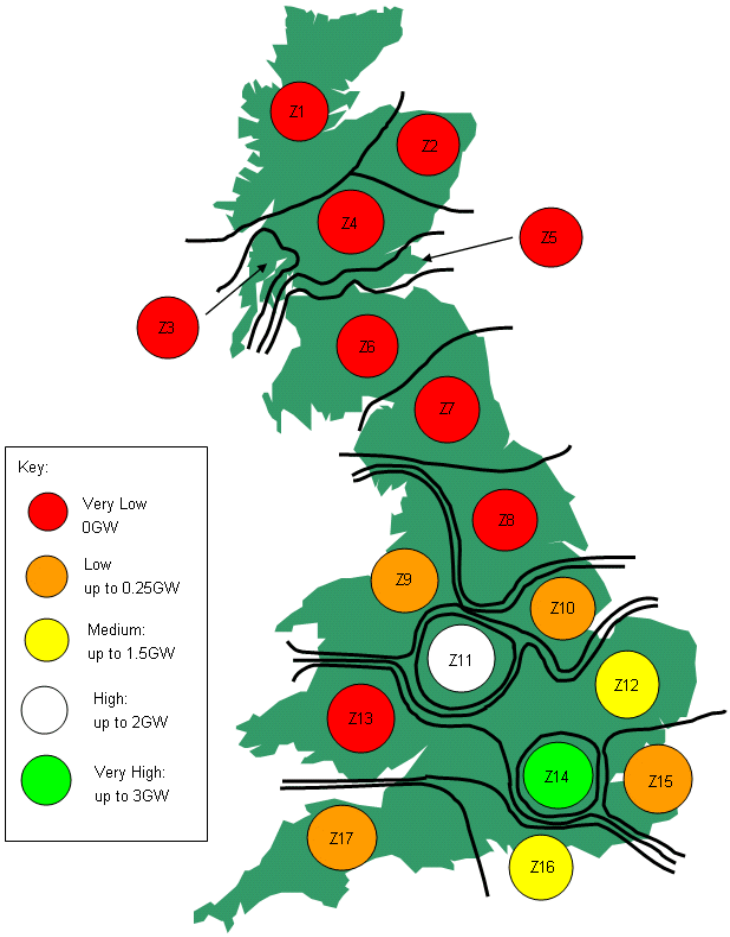
[2] Please see Ofgem's transmission Price Control Review Final Proposals document: http://www.ofgem.gov.uk/Networks/Trans/PriceControls/TPCR4/ConsultationDecisionsResponses/Documents1/16342-20061201_TPCR%20Final%20Proposals_in_v71%206%20Final.pdf

(TPCR)[3] sanctioned an unprecedented £4 billion of investment in the transmission system in the period between 2007 and 2012 for connecting new generation as well as maintaining or replacing existing assets, and included a system of revenue drivers which provide flexible funding should more generation materialise than was assumed in the baseline allowances. The associated TPCR revenue allowances were accepted by transmission licensees and they are now responsible for funding efficient expenditure on generation connections in the period between 2007 and 2012.

2.5. However, despite this high level of investment, which is sufficient to fund all efficient connections in the period between 2007 and 2012, the growth in generation capacity is exceeding the pace with which the necessary reinforcements can be built. As such, the current GB transmission system has very limited potential to accommodate new generation without further major system reinforcement, as represented by the zonal breakdown in figure 1 below.

Figure 1 – indication of the capacity of new generation that can be accepted on the GB transmission system without major reinforcements

[3] Please see Ofgem's Transmission Investment for Renewable Generation Final Proposals document:
http://www.ofgem.gov.uk/Networks/Trans/PriceControls/TPCR4/ConsultationDecisionsResponses/Documents1/9139-28804.pdf



2.6. The combination of a lack of spare capacity on the system and generators not allowed to export without the wider system being secure, new generation is triggering further infrastructure work. These works can be delayed for a number of reasons, simply because of the length of time to build, or because of delays in the planning process, such as has been the case with the Beauly-Denny line. As a consequence, there are substantial queues of generation wishing to connect. The current size of the queue of generation wishing to connect and export in Scotland is around 12GW.

2.7. The problem of generation queues is not now restricted to Scotland. In Wales around 9GW of generation has applied for connection, and is dependent on wider transmission system reinforcements. The queue in Wales is comprised of a mixture of gas-fired and renewable generation and presents a different challenge to that posed by the largely wind generation queue in Scotland. In addition to accommodating large volumes of generation onshore, in the near future we are also facing challenges associated with the potential for large volumes of new gas and nuclear generation, offshore connections, and links to the Scottish islands.

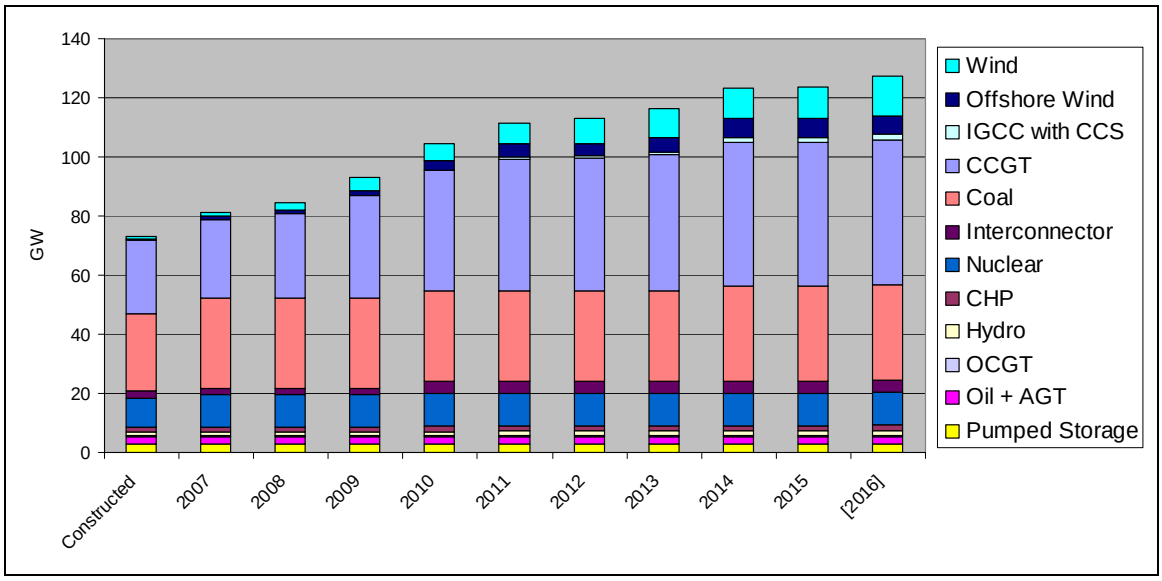
2.8. Ofgem and BERR are well advanced in developing the regulatory regime for offshore transmission networks, and have actively engaged industry via a range of

consultations, seminars and expert groups[4]. These offshore transmission networks are required to enable connection of around 10GW of wind generation, based on current forecasts. We have also initiated a workstream to look at the issues associated with potential connections to the Scottish islands. When the transmission price control for the period of 2007 to 2012 was reviewed, there was insufficient financial commitment from generators to justify an allowance for building connections to the Scottish islands at that stage. However, recent developments now mean that there is a greater likelihood that infrastructure investment will become viable. We have therefore recently published an open letter consultation[5] on potential approaches for connecting the Scottish islands, and in August 2007 chaired an industry working group to discuss the issues going forward.

Future location and type of generation connections

2.9. As we move forwards towards 2020, National Grid's current contracted generation background including offshore wind connections, indicates that the total generation will be around 125GW by 2016 compared to 77GW at present, as shown in figure 2:

Figure 2 – NGET generation contracted background



2.10. It is important to recognise that whilst there is a large volume of generation due to connect to the transmission system, it is difficult to assess the effect without a detailed understanding of the quantity and timing of generating capacity leaving the

[4] Please see Ofgem's website for details of the work undertaken on offshore transmission: http://www.ofgem.gov.uk/Networks/Trans/Offshore/Pages/Offshore.aspx

[5] For more information of this open letter please see the section on Ofgem's website dedicated to linking the Scottish islands: http://www.ofgem.gov.uk/Networks/Trans/ScottishIslands/Pages/ScottishIslands.aspx

system. Under the current arrangements, information in relation to generators' intentions to leave the transmission system is inadequate, with users only needing to provide a minimum 5 days' notice to reduce their transmission entry capacity (TEC). We consider that this does not help in creating an accurate picture of the challenges that the transmission system is facing, and is potentially undermining attempts to address the problems of the GB Queue and transmission access more generally.

2.11. If we are to meet the government's climate change goals of 20% of energy supplied coming from renewable sources by 2020, the implication is that between 20GW and 25GW of renewable generation will need to be accommodated. Under the current framework for planning and operating the system, 20GW to 25GW of renewable generation will require large investment in the transmission system to retain the same degree of redundancy and security of supply that we currently experience. However the challenges that we face are not solely a consequence of the volume of new connection applications, their location is similarly important, given that large volumes of renewable generation are sited at remote parts of the GB transmission system, or, as will increasingly be the case, sited offshore.

2.12. Wind generation is intermittent in nature which means that its output profile is intermittent and depends on meteorological factors, rather than fuel input price. Given the intermittency, wind generation requires back-up from other generators to ensure that if the wind speed goes outside the useable range and wind generators stop producing electricity, the security of the system won't be at risk. Currently this type of response is typically provided by thermal generation and therefore based on fossil fuel. It may therefore be the case that 20GW to 25GW of renewable generation requires either large system operation costs associated with contracting with existing thermal generation, or indeed building new thermal generation. Back-up from predictable thermal generation may also be required to keep voltage and frequency levels stable. This is particularly an issue in Scotland which has a relative lack of thermal generation, and can be susceptible to drops in voltage.

2.13. Potential swings in the nature of 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, whilst providing a more appropriate framework for connecting new generation. The GBSQSS details how the system should be planned and operated to accommodate new generation (and demand) connections. The current queue of generation is largely the result of the need to build large reinforcements to retain the existing degree of redundancy in the transmission system and maintain the current level of supply security. However, the GBSQSS was developed against the background of a predictable, primarily thermal fuel mix, and not one with substantial volumes of intermittent generation. An important question for the STAG work is whether this approach to building new connections and reinforce the system, which can be delayed for several years in the planning process, remains fit for purpose in the future.

2.14. In addition to the initiatives to improve the accuracy of information on projects in the queue, there is also the need to consider whether the planning and operating criteria in the GBSQSS can be altered to enable greater sharing of capacity, or building less capacity for a given volume of generation, to circumvent the need for system reinforcement. We also believe there is a need to further explore the

potential for the system to be operated in such a way that more capacity can be freed up from existing wires, by, for example, making greater use of weather related ratings on the network. We recognise that alternative approaches to system planning and operation present involve risks and potential costs for the transmission licensees or users of the system, but as yet there has been limited work to quantify what these risks and costs are. Therefore we would welcome further analysis.

Connection commercial framework

2.15. 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. NGET owns the England and Wales transmission system, with Scottish Power Transmission Ltd (SPTL) and Scottish Hydro Electric Transmission Ltd (SHETL) owning the systems in south and north of Scotland respectively. 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).

2.16. 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 users with access rights. The CUSC uses the concepts of Connection Entry Capacity (CEC) and 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[6]. A value for CEC (if directly connected to transmission) and TEC is agreed bilaterally for each relevant generator. TEC cannot exceed CEC.

2.17. 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, 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).

2.18. 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

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

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 include wider reinforcement works (sometimes called "deep reinforcement") 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.

2.19. 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 transmission assets if the generation 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. Following progress made by Ofgem's cross-governance working group, Access Reform Options Development Group (ARODG), in August 2006, NGET introduced a voluntary alternative approach for financial security for new generators and those generators applying for an increase in capacity. This approach was entitled Interim Generic User Commitment (IGUC) 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 document, 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.

2.20. 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, we do not consider that the TEC rights enshrined in the CUSC can be considered to be enduring, not least because the CUSC is a modifiable document.

2.21. 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.

Current Activity to Improve Grid Access

2.22. As mentioned above there is a considerable queue of generation wishing to connect to the transmission system in Scotland, and latterly Wales. In the case of connection in Scotland, many of these projects came forward at an early stage of development in order to take advantage of transitional arrangements under 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.

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

- GB Queue management initiatives - This is mainly to ensure that a more coherent set of information on demands for transmission capacity can be developed in the short term thereby helping to identify opportunities for earlier connection for the most viable projects and reducing the risk of stranded assets. 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.[7]

- Commercial framework development - The Access Reform Options Development Group (ARODG)[8] 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 – as detailed in the Commercial Framework Development chapter. 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.

- 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 GBSQSS - mentioned in the Energy White Paper as "A review of the planning standards" - is being conducted via the GBSQSS review group. The aim of this work is to ensure that the standards remain fit for purpose in a world with small increments of intermittent generation connect to the network. The transmission companies are in the early stages of identifying potential amendments to the GBSQSS 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.

[7] 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

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

2.24. The purpose of this document is to provide the Secretary of State with a progress report and update on each of the areas set out in the bullet points above.

3. GB Queue management initiatives

Introduction

3.1. NGET has published two consultation documents[9] on mechanisms to remove the existing market defects that have led to the GB Queue. The key proposal is a move to a more interventionist approach to contract management, within its existing licence and code requirements. This would see NGET enforcing clauses within contracts which give it the right to terminate projects in the event of non-compliance with the construction programme. NGET is also developing a mechanism which allows the most viable projects, irrespective of when they applied for connection, to move into any gaps which become available. The goal is to optimise the utilisation of the limited capacity available prior to reinforcements being completed.

3.2. NGET's final report consultation examined contractual and framework barriers that constrain its ability to take a revised approach to contract management (i.e. they looked at solutions within the existing regulatory framework). The goal is to ensure that a more coherent set of information on requirements for transmission capacity can be developed in the short term, so helping to identify opportunities for earlier connection for the most viable projects and reducing the risk of stranded assets. NGET aims to make several incremental changes to its contract management approach which, collectively, are anticipated to provide significant benefits in assisting the management of delays to connecting generation.

3.3. The following sections detail the main areas identified by NGET in its final report on GB Queue management initiatives.

Areas for Change

3.4. In March 2007 NGET issued a consultation on the contractual and commercial framework barriers in relation to the GB Queue and their proposed options for resolving them. This was followed by a conclusions report in June 2007. Whilst NGET has identified numerous detailed actions and initiatives as a result of the original open letter published in April 2006[10], it is focussing its attention on four main areas:

- Obtaining an earlier connection;
- Contract management;

[9] See NGET GB Queue Management Initiatives - Interim Report March 2007 and Final Report June 2007: http://www.nationalgrid.com/uk/Electricity/GettingConnected/gbagreements/latestinfo/

[10] Available at the following link: http://www.nationalgrid.com/NR/rdonlyres/38854DD0-6765-41B5-8546-D49699263A0F/6862/ConsultationonGBQueueIssuesFINALdoc.pdf

- Information provision, and
- Developments to Transmission Access.

Obtaining an Earlier Connection

3.5. Connections to the transmission system are progressed on a first-come-first served basis. The position in the queue that a generator holds does not necessarily relate to the progress it has made in terms of being in a position to connect.

3.6. NGET intends to address this issue by developing a detailed methodology later this year that will detail how those projects that are most developed may connect earlier if spare capacity becomes available. Earlier connection will not depend on queue position, effective date of the connection agreement or the project type, but will instead depend on the readiness of projects to use the GB Transmission System.

Developers' quarterly reports

3.7. Under the terms of their construction agreements, developers are required to provide NGET with quarterly reports on project progress. If a developer wishes to advance its connection date it will be required to make this known through the quarterly report process, indicating its aspirational connection date. The developer should also indicate whether the offer could be phased and what minimum level of capacity would be acceptable for an advancement. The aim of this process would be to streamline the way in which construction agreements are progressed.

3.8. A guide to completing quarterly reports will be sent to developers prior to the reports being due.

Transmission Licensee Review

3.9. The ability to obtain earlier connection dates is dependent on identifying transmission system capacity that had been previously allocated to a project that has either terminated or reduced its contracted capacity and created a gap in the GB Queue. When a permanent gap is identified as being available, a review will be undertaken to determine the projects that are willing and able to use this gap the soonest. This may be an earlier connection date that is no longer dependent on wider system reinforcements.

3.10. There may be an additional scenario where a project could be advanced without a permanent gap being available. This is where the current design may be based on a cluster reinforcement and it is possible to advance a connection with the use of temporary assets that may become redundant when the enduring solution is completed.

3.11. NGET is currently monitoring the connection status of projects in the queue with the hope of identifying and filling gaps in the queue.

Information Provision

3.12. NGET is looking to provide additional information to users so opportunities to connect to the transmission system can be identified more readily and earlier connection therefore facilitated.

3.13. There are a number of areas of work that have been identified that would improve the level and quality of information available to users. These are detailed in the following sections.

Quarterly Reports

3.14. In addition to introducing quarterly seminars with users to explain the developments in transmission access contractual arrangements and gain regular feedback, NGET has introduced a standardised template for quarterly construction reports. These are for use by connectees to improve the quality and consistency of information available to NGET. The rationale for quarterly reports is mentioned above in relation to "obtaining earlier connections".

3.15. These reports also allows developers who wish to advance their connection to indicate their readiness and willingness to do so in their quarterly report to NGET by the inclusion of an aspirational connection date. Developers will be notified whether this is possible, and reasons given if it is not.

3.16. If a gap is available for a developer to move into, a fee will be paid for a modification application to change its connection agreement. The developer will be told the MW that are available and the number of other applicants. Applications will be processed simultaneously, offers will be interactive, and will be issued on the basis of the first party to accept is awarded the connection agreement.

3.17. The conditions on which they will move forward will depend upon acceptance of amendments to the bilateral contract including for example:

- The developer's construction works and the associated milestones;
- The back stop date in the construction agreement;
- A TEC Reduction Clause, and
- Financial Commitment- user commitment security posting.

NGET Milestones

3.18. NGET is seeking to provide timely and accurate information that is of value to developers and does not place undue burden on the transmission licensees. NGET has requested that the relevant transmission licensees review their milestones in the light of comments received by developers and has also requested them to provide up to date milestones to complement the date slippages notified in December 2006. The relevant transmission licensees are looking at these developments but full information is currently unavailable.

Market Information

3.19. CAP145 "Embedded Generator MW Register" was approved by the Authority in June of this year and has now been implemented. This change ensures that customers have more complete information regarding generation projects that have an impact on the GB Transmission System. The existing TEC register provides details of projects contracting to use the transmission system. CAP145 requires the publication of a new "Embedded Generation MW Register" detailing embedded generation projects that do not have rights to use the transmission system but which, due to their size, nevertheless have an impact on the GB Transmission System. By examining these registers together customers will have a more complete picture regarding projects that have an impact on the transmission system and can make a better assessment of how the projects may impact on their own developments.

3.20. NGET is looking to publish more information on capacity and reinforcements as an overview of the market. This would include publishing sequential data on transmission reinforcements that shows the amount of capacity released by each reinforcement including:

- What capacity can connect when the reinforcement is complete;
- The amount of capacity that requires the reinforcements, and
- Other reinforcements that may be completed at a later date.

3.21. To show how the status of the contracted position changes over time, NGET plans to produce information that reflects the changes. NGET is currently developing the data it intends to provide, but at present it intends to include:

- The volume of generation connected in the current year by relevant transmission licensee, and
- The volume of generation contracted to connect in current and each future year, differentiated by consent/construction status and by relevant transmission licensee, and potentially month on month changes.

3.22. NGET is currently developing additional framework changes and has raised several CUSC modifications, CAP 150-155[11], which are still at the working group stage. These include the obligation on NGET to provide more information on the planned/contracted Reinforcements and how these relate to specific generation developments as well as providing NGET with the capability to reduce a user's

[11] Details of CAP150 "Capacity Reductions", CAP151 "Construction Agreements Work Register", CAP152 "Exhibit B Revisions", CAP153 "Exhibit D Revisions", CAP154 "Exhibit F Revisions" and CAP155 "Exhibit I Revisions" are available at the following link: http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/amendments/currentamendmentproposals/

capacity holdings where it does not accord with project status (e.g. a project that has a contract connection of 100MW but planning consent for only 60MW).

Contract management

3.23. NGET intends to take a more active role in contract management whereby communication will increase via the quarterly reports and milestone management. In addition, NGET has stated its intention to take a more robust approach to those projects who do not meet their contractual commitments including those who do not obtain planning consents.

3.24. It is anticipated that this may result in the termination of some projects and slipping the connection dates of other projects which will provide opportunities for other projects with planning consents to connect earlier.

3.25. The following sections detail the main initiatives being taken forward by NGET, and the progress to date.

User Project Milestones

3.26. Prospective generators enter into a construction agreement upon signing a connection offer. Developers are then required to communicate the progress of the project against various milestones. Failure to communicate progress against these milestones can lead to NGET no longer being under obligation to begin the construction programme. If the milestones are not reached and no modification to the connection application is made, then NGET may suspend transmission reinforcements and will only recommence these once a new construction programme is agreed.

3.27. NGET has proposed introducing a template to facilitate improved communication of progress against these milestones and follow a more proactive approach. This includes setting out key objective milestones agreed with the developer. Examples of the proposed milestones are:

- Power Station Planning Consent Application;
- Planning Consents Achieved;
- Power Station main Plant Procured, and
- Power Station Construction.

3.28. The key milestones and any alternatives will be agreed with the developer on a bilateral basis.

Allowing Developers to Slip Dates

3.29. Developers can ask for connection dates to be delayed in the event of failure to obtain planning consents or to avoid a situation in which they can not meet their milestones. NGET proposed not allowing developers to delay their connection date beyond the Backstop Date in the contract if other developers could benefit from the earlier connection and therefore prevent sterilisation of capacity.

3.30. NGET proposes that the completion date can only be slipped if the developer continues to meet its construction milestones and will complete their project by the backstop date.

TEC Reduction Clause

3.31. NGET has raised CAP150 "Capacity Reduction" to ensure that the clause that allows developers to reduce their TEC is used on a consistent basis. The amendment would also give NGET the right to reduce capacity for projects that are not progressing in conjunction with the above milestones.

3.32. NGET would contact a developer if the TEC in their connection agreement differs from the capacity granted in planning consents, or, for example, from capacity contracted for with a turbine manufacturer. If the developer does not provide sufficient information to explain this discrepancy NGET reserves the right to reduce the party's TEC. The reductions would be referable to Ofgem in the event that the developer considered that NGET's action was unreasonable.

Contingent TEC Reduction Clause

3.33. NGET's initial desktop analysis indicates that there is an amount of capacity available ahead of the Beauly-Denny upgrade in the event that certain generators do not materialise. Some of these generators do not have planning consents and are unlikely to proceed. NGET therefore considers that users' connections may be brought forward if they are willing to accept a short-term TEC product that could be reduced in the event that certain other generators' connections do proceed.

3.34. This approach would allow a degree of "over contracting" (i.e. allocating more capacity than the system has available) without exposing the end consumer to increased costs. The clause would allow developers that considered that an adjacent project ahead of them in the queue was unlikely to proceed (but who had nevertheless not yet relinquished their capacity formally) to obtain an earlier connection date. If the developer's judgement was incorrect and the adjacent project connected, then the TEC reduction clause would be applied.

Reductions of Capacity

3.35. Some developers have approached NGET with requests to reduce the capacity of their connection agreements by significant amounts leading to changes in the

connection design and many associated works, often including substation locations. NGET's initial view was that such significant changes are arguably entirely new connection applications and the process should be started afresh.

3.36. NGET has concluded that projects wishing to reduce their capacity should do so via submission of a Modification Application, which will be assessed in the normal way and a Modification Offer being made in due course. This may result in the developer incurring certain one-off charges.

3.37. In cases where the change in project size was such that a connection via the Distribution Network Operator (DNO) might now be more economic than connection to the transmission system then NGET would still use the above approach but would also seek to work with the relevant network licensees to ensure that the overall connection solution was economic.

Identification of Economic Works

3.38. A number of offers have been made on the basis of projects sharing works for connection. Where advancements of connection dates may be possible, NGET intends to discuss advancement of the works with the relevant parties. If the parties agree then the appropriate amendments can be made.

Ofgem's views of the GB Queue management initiatives

3.39. In general we are supportive of efforts to remedy the defects of the transmission access arrangements that have enabled the GB Queue to grow to its current size, and in particular changes that could expedite the connection of new generation in an efficient manner. We therefore consider there is merit in efforts to ensure that parties in the GB Queue are viable and are not speculatively occupying a place. We feel that taking a more robust stance to projects that slip their milestones, or are no longer feasible has the potential to free up useful space in the queue, from which other parties can benefit. However, the extent to which these measures will have an effect is unclear.

3.40. In particular, we consider that the accuracy of information regarding projects that wish to connect to the system is of paramount importance. It is up to the transmission licensees to interpret the information that is available to them in order to make the most appropriate investment decisions. Without accurate information the transmission licensees are not able to invest in their transmission networks in as efficient a manner as possible. More accurate information about, for example, the viability of generators in the queue, consents status and their intended generation profiles, would reduce the chance that investment in the transmission system is sub-optimal. We would therefore welcome further efforts to help ensure that the information generated on parties in the GB Queue is as accurate as possible, and that the connection application process is targeted at ensuring that if a queue does develop, it is not composed of unviable projects that are delaying otherwise viable projects from connecting to the transmission system.

4. Commercial framework development

Introduction

4.1. The commercial frameworks initiative that NGET has been taking forward with industry consists of two parts. The first has seen the continued progression of modification proposals currently under development by the industry. NGET and the industry consider that certain aspects of these proposals may complement the contractual developments discussed previously.

4.2. The second area draws on the conclusions of technical reviews and ongoing work by NGET and considers whether other changes to commercial frameworks are required. This has been an industry led process and NGET expects further changes will come forward as proposals to amend the CUSC late in 2007. However, Ofgem anticipates that further proposals to amend the CUSC will interact with the longer term TAR work that is ongoing. We therefore consider that it is important that the existing CUSC governance arrangements are as robust, transparent and as accountable as can reasonably be expected.

Short Term

4.3. Five industry code amendment proposals have been raised (four are live and one has recently been approved) which attempt to improve the GB Queue and aspects of the transmission access arrangements. The following sections detail the proposals that have been raised to amend the CUSC. This document is not the appropriate forum for Ofgem to provide its views on the qualities of these amendment proposals, but rather serves to provide an update on their progress.

CAP 131- User Commitment for New and Existing Generators

4.4. NGET raised CUSC amendment proposals 131 (CAP131) in November 2006. This seeks to change the securities parties must put in place to cover their liabilities if they fail to connect. Currently parties waiting to connect are required to provide Final Sums Liabilities (FSL)[12] to provide security while construction is underway for their connection. The purpose of providing this financial security is to protect against connection assets form being stranded. The amount of financial security a user is required to provide is set to recover the actual costs of accommodating a new party to the transmission system. CAP 131 seeks to change FSL by introducing an enduring, mandatory change for existing users. The proposal would:

- replace FSL with a generic, predictable, fixed and, in aggregate, lower level of security;

[12] Either by the traditional final sums approach or via the voluntary Interim Generic User Commitment (IGUC) methodology. For more details see NGET's website: http://www.nationalgrid.com/uk/Electricity/gb_agreements/

- introduce a non-refundable holding fee to deter speculative applications, and
- increase the level of commitment provided by existing generators.

4.5. CAP131 proposes significant changes to the existing market rules, requiring the revision of all existing connection offers. Parties would no longer be able to hold onto a connection offer indefinitely and would face a £1/kW/yr holding fee (up to a maximum of £3/kW) for each year they were in the queue without construction works having started. Once works began, liabilities would ramp up over a 4 year period to a total of 6 years worth of TNUoS charges. (e.g. a year into the construction program a user would have secured 1.5yrs worth of TNUoS charges and after 3 years they would have secured 4.5yrs worth of TNUoS charges).

4.6. CAP131 would also increase the notice period provided by generators wishing to reduce or cancel their access entitlements. Rather than the present requirement to provide 5 days' notice to reduce TEC or 28 days notice to close, the proposal would require generators provide 2 years notice of closure or face a penalty equal to 2 years worth of TNUoS charges.

4.7. The proposer considers that CAP131 might be expected to improve the information available to the transmission licensees, and would deter speculative applications thereby removing unviable projects from the GB Queue.

4.8. CAP131 has now reached Ofgem for a decision and we have given notice to the industry that we intend to publish an impact assessment.

CAP142 – Temporary TEC Exchanges

4.9. CAP142 was raised by British Energy and sought to utilise the existing level of capacity more efficiently by allowing existing users to trade their capacity on a temporary, within year basis, subject to an appropriate exchange rate being determined by NGET. This capacity leasing may allow any unused or underused capacity to be transferred between existing users and maximise the use of the transmission system.

4.10. Whilst the amendment will not directly have an impact on the GB Queue, by increasing the opportunities available to network users, the proposer considers it will increase flexibility and facilitate competition. This flexibility may allow both generators and the wider market to respond to unanticipated events, such as a plant breakdown, in a more efficient manner. We also note that the ability to trade capacity for various time periods would be expected to increase the likelihood of successful trades taking place, benefiting the efficient operation of the transmission network.

4.11. The modification was approved in June 2007[13].

CAP143 – Less firm products

4.12. There are currently two short term transmission capacity products available, short term TEC and limited duration TEC. Both of these products are only awarded if they will not create or exacerbate a constraint at any point during the period for which the product is requested. This means that there is little or no chance of a party in Scotland using either product. Scottish and Southern Energy has raised CAP143 to address this.

4.13. CAP143 seeks to provide opportunities for parties to use the transmission network prior to the completion of reinforcement works. A generator would purchase a product (Interim TEC) which affords rights to use the transmission network for all but x periods of the year. During these x periods, the System Operator, would be able to constrain the party off the system without paying compensation.

4.14. The Proposal was issued to the Authority for a decision on the 11th September 2007.

CAP148 – Deemed Access Rights to the GB Transmission System for Renewable Generators

4.15. CAP148 was raised by Wind Energy (Forse) Limited and aims to provide priority transmission access for renewable generation. Renewable generators would receive transmission access rights following a fixed period (e.g. 3 years) after the later of the project gaining consent or accepting a connection offer from NGET. The proposal also aims to enable administered bid prices to be made to generators that are constrained off/down, with the associated payments being funded from TNUoS charges.

4.16. NGET has discussed the appropriate charging arrangements for the 'Deemed TEC' product detailed under CAP148 at the Transmission Charging Methodologies Forum. NGET believes that in order to meet its charging objectives, which include facilitating competition and cost reflectivity, it would need to charge any additional operational costs caused by the release of DTEC back to DTEC holders (i.e. treat DTEC as a distinct service).

4.17. The CAP148 working group report was presented at the August CUSC panel meeting, and it will now proceed to wider industry consultation. NGET will release an open letter setting out its intentions with respect to the charging arrangements associated with DTEC, to assist parties wishing to respond to the consultation.

[13] For details of the Authority's decision letter please see the following link: http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/amendments/currentamendmentproposals/

CAP149 – TEC Lite

4.18. The GB transmission system is designed in accordance with the planning criteria contained in the SQSS. The generation connection planning criteria define a minimum standard of connection, but allow a lower (or higher) standard of connection based on a customer request, provided this would meet the associated conditions described in the SQSS. These are that the revised standard:

- would not reduce the security of the main transmission system;
- does not result in additional investment or operational costs to any other user;
- does not compromise the transmission licensees' ability to meet other statutory obligations or licence obligations, and
- in order to meet these conditions, generators that request a lower standard of connection (e.g. a single circuit connection) usually have to accept restricted access (e.g. when the single circuit is out of service).

4.19. CAP149 was raised by Scottish and Southern Energy Generation Limited and aims to increase the transparency of SQSS design variation connections and the associated access restrictions with changes to the CUSC and associated exhibits.

4.20. Under the current Charging Methodologies, users that request a design variation pay the same use of system charges as those that do not. To remedy this NGET is progressing a charging methodology modification to provide a use of system charge discount to users that request a design variation. CAP149 would enable parties to request a discount under the charging methodology should its connection meet the relevant criteria.

4.21. CAP149 is currently being developed by a CUSC working group, and the working group report is due to be presented at the September CUSC panel meeting.

Long Term Commercial Framework Interactions - TASG and TAR

4.22. The Transmission Access Standing Group (TASG) was reconvened to discuss the development of more flexible arrangements to allow generators to gain access to the transmission network. In light of an increase in renewable generation the group considered whether any revised arrangements would better facilitate their integration into the transmission system.

4.23. Over a four month period from May to August 2007 the working group, consisting of industry representatives, developed seven high level models of transmission access. These models aimed to provide greater flexibility for parties to gain access or exchange access in the short term as well as identify the options for change and implications for the CUSC and industry documents. The report was

submitted to the CUSC panel on 23 August 2007. Any signatory to the CUSC may develop any of the models into a CUSC modification for review by the panel.

4.24. The models developed are outlined in the remainder of this chapter.

Models identified by the Transmission Access Standing Group

Temporary TEC Transfer

4.25. This model sought to allocate the existing transmission entry capacity more efficiently by creating more opportunities to transfer capacity between generators above existing arrangements from CAP068 'Competing Request for TEC'[14] and CAP 142.

4.26. The model developed aimed to create more flexible opportunities to transfer capacity within a shorter timeframe. The additional flexibility would be provided in part by centrally administered, rather than bilateral, transfer arrangements. As with CAP142, this transfer of capacity would only be for a defined period.

Extra TEC

4.27. This product aims to identify bands of incremental transmission access available in operational timescales together with the associated costs. This additional access would be auctioned by NGET with the identified costs used as the auction reserve price.

Overrun

4.28. This model allows generators to generate above their capacity holdings of TEC. The units generated above this level are then charged at the actual cost of constraints they cause to other users. The development of overrun would also require a short-term access pricing methodology.

Connect and Manage Models

4.29. In addition to the above models which are largely based on amending the existing system of invest then connect, alternative models such as Connect and Manage were identified by TASG. Connect and Manage is used as a broad term to describe arrangements where a generator is provided with a firm connection date and if the necessary infrastructure is not built in time, the generator can still generate or have its rights bought back by the system operator.

[14] for more information on CAP068, please see the following link: http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/amendments/amendment_archive/

a. Connect and Manage - transmission access rights would be provided by a fixed date, enabling the generator to export onto the system regardless of whether the wider system reinforcements were completed. In constrained areas where operational costs are higher than investment costs, these additional operational costs would be socialised.
b. Connect and Manage Plus - this approach would essentially be the same as above but with the addition that cost reflective charges are removed and a uniform or "Postage stamp" approach adopted. Generators would be constrained off at an administered bid price.

Moderated Sharing of Capacity

4.30. This model entails firm and non-firm generation sharing capacity. Generators with existing access rights could transfer these to a new generator and avoid paying TNUoS charges. The existing generator would continue to be a party to the Balancing Mechanism, whereas the new generator would not.

Shared TEC

4.31. TEC would be shared between two parties. The availability declarations of each party in operational timescales must not in aggregate exceed the shared TEC value. Charges would be calculated on a cost reflective basis as a multiple of TEC, to reflect the additional local assets per MW of capacity.

Novel or 'Nov' TEC

4.32. The facilitation of temporary transfer of current or future long-term access rights to generation from Novel renewable sources.

Ofgem's views of commercial framework development

4.33. Whilst we can not comment on the specifics of the CUSC amendment proposals that have been raised and are detailed in this chapter, we can comment on the way in which the industry code process works. Having already convened ARODG to circumvent the problems associated with the relatively narrow focus of the industry codes processes in the case of transmission access issues, we consider that there are areas of the existing arrangements that are inflexible. In addition, we also feel that the process can be arduous and slow – for example in the case of CAP131 over 30 permutations of the amendment were identified, each needing to be assessed and ranked.

4.34. In relation to the work of TASG, we have found that the discussion and output of the group has been particularly useful in helping to inform the transmission access debate, and has provided us with additional information that we can apply to the TAR work we are undertaking with BERR.

5. Review of system operation

Introduction

5.1. Assuming that there is efficient allocation and sharing of transmission capacity, the amount of new generation that can be accommodated by the transmission system is ultimately limited by the network capacity that can be made available in operational timescales. The availability of network capacity is primarily based on the transmission assets installed. More capacity can be made available by investment in new transmission assets. However, even with the same assets, the available transmission capacity is heavily dependent on the way the system is maintained and operated by the transmission companies.

5.2. The way the GB transmission licensees operate their system is partly determined by existing rules and criteria, such as those contained in the GBSQSS, which they are required by their licence to comply with. Equally important are the choices and decisions made by the transmission companies themselves in operating their system. The review of issues relating to the GBSQSS is discussed in Chapter 6. This chapter focuses on the review of the practice and approaches adopted by the transmission companies, to examine opportunities for releasing more transmission capacity.

Transmission System Operation Review Group

5.3. TSORG was established by Ofgem to undertake a review of transmission system operation. The work has been carried out by the three transmission licensees, in conjunction with Ofgem and BERR, so as to identify ways in which additional capacity might be made available with existing transmission system infrastructure.

5.4. The group looked at whether 'spare' capacity existed in an operational timescale, particularly across active constraint boundaries, and whether more capacity could be made available from the existing assets. Data was gathered to show the use of the system at boundaries, plant capability was examined, and methodologies to make full use of the available network were considered.

5.5. A work programme has been proposed for further assessment of constraint boundaries to provide a time-dependent profile of these constraints to ascertain the profile of the marginally available capacity[15].

5.6. TSORG identified a number of avenues to be pursued which may help with improving marginal capacity. Some of these options have been assessed by the transmission licensees and are considered to require changes to the GBSQSS framework in order to allow them to be implemented.

[15] For further details, please see the TSORG report which is available in the following area of Ofgem's website:
http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/tar/Pages/Traccrw.aspx

5.7. TSORG has concluded that some minor changes may be developed to release capacity at the margin in operational timescales, and that this is likely to reduce constraint volumes. However, these changes are less likely to lead to substantially increased opportunities for connection of new generation projects. This is because transmission system requirements for new generator connections are assessed under GBSQSS planning criteria, which may not reflect fully all the improvements that are possible in operational timescales. For example, operational and commercial intertrips[16] are used by the system operator to deal with potential system problems occurring in operational timescales. However, the GBSQSS currently limits the use of intertrips in planning timescales to local generation connections only and not the planning of wider infrastructure reinforcements.

Ofgem's views of TSORG going forward

5.8. We note the useful work that TSORG has undertaken and welcome the manner in which the group has addressed its terms of reference. However, we consider that some of the issues reported upon by TSORG can be further explored to identify the potential for releasing additional system capacity, and cost-benefit analysis could be undertaken where appropriate. From our assessment of the TSORG work, we have identified four main areas where we intend to seek further information from the transmission licensees:

- short/medium term measures which could reduce constraint volumes;
- improved information about actual and required utilisation of the GB transmission system;
- research and development work being undertaken to improve understanding of transmission plant and system capability; and
- review of limiting factors in the GBSQSS.

Proposed further investigation

5.9. The short to medium term measures that could reduce constraint volumes include:

- using enhanced ratings, for example through raising the operation temperature of overhead line circuits (known as “hot wiring”) and enhancing the ratings of circuits based on better real time temperature monitoring;
- improving the understanding and therefore the quality of short term rating information, so that the benefits of any actions by the system operator could be fully realised;

[16] An intertrip will automatically disconnect a generator or demand from the Transmission System when a specific event occurs. There are two types of intertrip service, Commercial Intertrips, and System to Generator Operational Intertrips

- improving outage planning for the transmission system, including extending the outage planning horizon, so that the transmission assets are made available as much as possible, and

- investigating options to reduce protection clearance times, especially in relation to enhancing the system dynamic capability in terms of voltage and stability performances.

5.10. In addition, it is important that accurate information is made available about the actual and required utilisation of the GB transmission system. Ways to help achieve this include:

- greater understanding of the utilisation of transmission system boundaries;

- greater recording of information about the reason for constraints, and

- information needed about the GB queue, including summary information:

    - showing generators seeking connection at an earlier date than can be accommodated on the GB transmission system under the current framework; and

    - highlighting dependencies between new generation connections and proposed transmission system reinforcement works.

5.11. We also consider it important to better understand the limiting factors to the capability of transmission plant and system, and will investigate research and development work being undertaken to improve understanding of transmission plant and system capability. The information to be sought will include:

- R&D projects that have been initiated under the Innovation Funding Incentive (IFI), and the future plans; and

- identification of regulatory issues affecting further innovative development work.

5.12. We also consider it important that limiting factors in the GBSQSS are reviewed. The review of the key building blocks of the GBSQSS is further discussed in the next chapter. Specific information relating to system operation that has impact on the review of the GBSQSS that we will be seeking from the transmission licensees in the area includes:

- the consequences of allowing for greater use of intertrips;

- the scope for changing the most onerous fault condition assessed (from three phase double circuit fault);

- extend fair weather relaxation provisions to E&W, and

- additional economic criteria that can be considered as part of cost benefit analysis.

5.13. We propose to issue a specific request to each transmission licensee shortly, setting out action points and associated deadlines.

6. Review of the GBSQSS

Introduction

6.1. The GB transmission systems is planned, developed and operated in accordance with the GBSQSS as specified in the transmission licences. The GBSQSS sets out the criteria that the transmission licensees are required to apply when planning investment in their networks and operating the transmission system.

6.2. For the planning stage, the GBSQSS defines the range of system conditions including the demand and generation background to be assessed and the events for which the transmission system is required to be secure. These conditions must be applied when designing transmission network infrastructure and connections to it. Similarly, the operational criteria in the GBSQSS define the range of system conditions to be assessed and the events for which the transmission system is required to be secure. The operational criteria are closely related to the planning criteria but also provide additional flexibility to manage actual system conditions approaching and during real time operation of the transmission system (e.g. to accommodate planned or forced outages on the transmission system or on plant or systems connected to the transmission system).

6.3. The rules defining the system conditions and events to be secured in both planning and operational criteria are deterministic in nature. More specifically, the events that are secured generally involve two pieces of primary transmission equipment being out of service. Therefore, the GBSQSS is commonly known to be based on N-2 deterministic criteria in planning and N'-D deterministic criteria in operation, where N denotes an intact network with all transmission equipment in service, N' denotes a network with prior outages of transmission equipment due to maintenance or faults, and D denotes a narrower definition of outage of two circuits, i.e. that of two overhead line circuits strung on the same towers.

6.4. The GBSQSS was introduced at the implementation of BETTA in April 2005. This is effectively a result of harmonisation of the relevant standards that were applied separately before BETTA by the three transmission licensees. The bulk of the GBSQSS was based on the standard that was applied to National Grid's system before BETTA, while retaining certain regional differences. National Grid's security standard had been subject to a thorough review in the mid 90's, where alternative criteria such as N-1/N'-1 instead of N-2/N'-D, or probabilistic instead of deterministic, were considered but rejected due to potential concerns regarding higher risk of security and reliability of supply, and/or complexity and uncertainty in application.

6.5. A major question for the transmission access work is whether the existing standards remain fit for purpose in a world with a high volume of intermittent generation connecting in remote parts of the network.

Progress to date

6.6. This workstream is being taken forward by the transmission licensees who have initiated a review of the GBSQSS in accordance with the revised governance arrangements for the GBSQSS that the licensees voluntarily put in place. The purpose of the review is to clarify the treatment of wind generation in the GBSQSS. One of the assumptions for this review is that the current level of overall system security should be maintained. Initially the required review work is being carried out by a working group established by the GBSQSS Review Group. The transmission licensees propose to consult on the findings of this review work and any GBSQSS change proposals developed. The transmission licensees plan to submit a formal report to Ofgem.

6.7. The transmission licensees have sought to make information about their review work available to other industry parties. Information about the assessment work has been published on NGET's website and the licensees have also held industry workshops at key stages of the review.

6.8. The transmission licensees' review work is expected to lead to a conclusion report in spring 2008. This report may identify proposals to change the GBSQSS that will be submitted to us for approval. An impact assessment may be needed to inform our decision on GBSQSS change proposals.

Further work and interactions with the offshore transmission review of the GBSQSS

6.9. In addition to the treatment of intermittent generation, other aspects of the GBSQSS may also need to be reviewed to establish whether they are still appropriate against the current background of large volumes of generation seeking connection, some of which is of intermittent nature and in locations remote from the existing network infrastructure. For example, questions have been raised whether the deterministic set of N-2/N'-D secured events should be reconsidered. An alternative approach, whereby the system's minimum standard is based on security in the event of one fault outage (N-1) rather than two fault outages has been touched on during the discussions of the GBSQSS review group for the offshore transmission project[17].

6.10. In principle operating under an N-1 regime would mean that the minimum planning standards for the transmission system build in less redundancy, and there is the potential for more generation to be accommodated for a given level of investment than under N-2. However, there has been no up-to-date detailed assessment of the costs and benefits of moving to N-1, and it would be a substantial change to the way in which the system is planned. The factors that would need to be considered include the impact on consumers in terms of reliability of supply, costs

[17] For more information please see Ofgem's website: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=2&refer=Networks/Trans/Offshore/Sqss

of constraints, infrastructure costs, reserve costs and the effect on transmission losses. This would need to be balanced against the economic and environmental benefits of connecting higher volume of generation earlier. We would therefore welcome efforts by the GBSQSS review group to conduct further analysis on what the implications would be of moving away from the existing standards and towards N-1.

6.11. The offshore transmission GBSQSS review group has identified other methods that may have the potential to squeeze more capacity from an offshore transmission system, which could equally be applied onshore. One such approach would be to use more dynamic ratings on transmission lines that relate more closely to prevailing weather conditions – this was picked up both under the offshore GBSQSS review group's discussions, and also by TSORG. In principle, the ambient temperature in which a transmission line transports power has an effect on its efficiency, and the amount of capacity it can accommodate. We would welcome further analysis from the GBSQSS review group to determine what the potential is for making more use of weather related transmission line ratings, what additional capacity might be made available, and what the consequences would be for system operation.

6.12. An additional point we would like to make is that the current GBSQSS governance process is voluntary and changes to the content of the document are largely agreed by the licensees cooperating with each other and proposing changes to Ofgem. Some concerns have been raised about specific aspects of the GBSQSS governance arrangements in particular in respect of the limited representation on the GBSQSS Review Group. We would welcome continued assessment of the appropriateness of the governance arrangements going forward, to ensure the process is as robust, transparent and accountable as possible.

7. Conclusions

7.1. It is evident that the GB electricity transmission network faces significant challenges both now and in the future from an almost unprecedented increase in new generation capacity, estimated at some 45GW over the next 10 years. Much of this is situated in remote locations, which potentially presents challenges in terms of network reinforcement needs, with the associated investment costs, and delays due to construction timescales and planning consents.

7.2. As such, we believe it is appropriate that consideration is now being given to the potential benefits of sharing of transmission network capacity. Sharing network access and making better use of existing infrastructure could enable more rapid development of renewables, rather than relying only on major new build to address the problem of constrained networks.

7.3. Consideration of the short term access related initiatives that are described in this report, leads to the overall conclusion that while progress has been made in a number of areas, much remains to be done and should continue be addressed under industry governance processes, and by National Grid in particular in its role as GBSO.

7.4. In relation to the specific areas that the STAG report was asked to assess, we consider that:

- GB Queue management initiatives - In general we are supportive of efforts to remedy the GB Queue, and in particular changes that could expedite the connection of new generation in an efficient manner. We feel that the accuracy of information regarding projects that wish to connect to the system is of paramount importance, as this information forms the basis on which the transmission licensees invest. If they are receiving spurious signals, there is additional risk that investment in infrastructure is not as efficient as it could be. We welcome the steps taken lately by the GBSO to manage the contractual relationship with its users in an enhanced manner;

- Commercial framework development - Ofgem led ARODG during the last price control review and signalled our position with regard to issues such as user commitment and final sums liabilities. CUSC proposals are being developed but, mainly due to the process being susceptible to delays and difficulties associated with the ability to raise potentially numerous permutations of similar modifications, the process can be slow;

- Review of system operation – we have chaired TSORG to examine how the transmission licensees could release more transmission capacity in operational timescales. Whilst we consider that useful work has been produced, and we have useful insight into the practices and tools used by the licensees, we consider that further steps could be taken. In particular, the work of TSORG was not conducted from the perspective of undertaking cost-benefit analysis of initiatives that were identified, such as greater use of enhanced weather ratings, greater use of intertrips and fair weather relaxations. We therefore think additional analysis could be taken forward to identify the costs and benefits associated with

the initiatives we identify in chapter 6, and in particular to understand the consequences of trade off between releasing more capacity from the system against security of supply; and

- Review of the GBSQSS – this area is important in determining the appropriate treatment of intermittent generation but progress has been slow and is hampered by a voluntary governance structure. Furthermore, given that a relaxation of planning standards to, for example, N-1 could release further capacity but at the cost of lower system security, we would propose that this risk and benefit needs to be examined further by the GBSQSS group.

Appendices

Index

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.[18]

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[19].

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[20]; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[21]

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:

[18] Entitled "Gas Supply" and "Electricity Supply" respectively.
[19] 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.
[20] 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.
[21] The Authority may have regard to other descriptions of consumers.

- Promote efficiency and economy on the part of those licensed[22] 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[23] 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.

[22] Or persons authorised by exemptions to carry on any activity.
[23] Council Regulation (EC) 1/2003

Appendix 2 - 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

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.

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.

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 (BERR)

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.

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.

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 3 - Feedback Questionnaire

1.1. We are keen to consider any comments or complaints about the manner in which this report has been conducted. In any case we would be keen to get your answers to the following questions:

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

1.2. Please send your comments to:

Andrew MacFaul
Consultation Co-ordinator
Ofgem
9 Millbank
London
SW1P 3GE
andrew.macfaul@ofgem.gov.uk