To generators, shippers, suppliers, network companies, consumers and their representatives, the sustainable development community, and other interested parties.

Promoting choice and value for all gas and electricity customers

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Project TransmiT: A Call for Evidence - Technical Annex

This technical annex provides an overview of the existing electricity and gas transmission charging and connection arrangements. It should be read in conjunction with the call for evidence open letter[1].

This annex is structured as follows:

Section 1: provides an overview of the existing electricity transmission charging arrangements.

Section 2: provides an overview of the existing electricity transmission connection arrangements that fall outside the scope of the Government's work on enduring access reform.

Section 3: provides an overview of the existing gas transmission charging.

Section 4: provides an overview of the existing gas connection charging arrangements.

1. Electricity transmission charging arrangements

Industry structure

1.1 The electricity transmission system in Great Britain - the National Electricity Transmission System (NETS) - is owned by privately owned network companies ('Transmission Owners' or 'TOs'), which have responsibility for delivering and maintaining the infrastructure required by users seeking connection to and use of those networks.

1.2 There are currently three TOs. National Grid Electricity Transmission Ltd (NGET) owns the England and Wales transmission system, while Scottish Power Transmission Ltd (SPTL) owns the network in the South of Scotland and Scottish Hydro Electric Transmission Ltd (SHETL) owns the network in the North of Scotland.

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

The NETS will be extended into offshore waters at a point where assets are transferred to the successful bidder of the offshore competitive tender process.[2]

1.3 Separately, a single System Operator (SO) is responsible for the day to day operation of the whole NETS, and is the contractual interface with users seeking connection to and use of the NETS. This role is performed by NGET.

1.4 The network companies (both TOs and SO) are subject to regulation by Ofgem, with their duties and obligations set out in licence conditions and UK and European legislation.

Charging structure

1.5 Transmission assets that are owned by the TOs fall into two distinct sub categories; (i) "transmission connection assets", generally referred to as assets that solely facilitate connection of individual generators or demand users to the NETS; and (ii) "transmission infrastructure assets", generally referred to as assets that facilitate access to the NETS and the flow of power across the NETS.

1.6 Users of the NETS are subject to three elements of transmission charges:

- **Connection charges** – these are charges for the provision and maintenance of connection assets.

- **Transmission Network Use of System (TNUoS) charges** – these are charges for the provision and maintenance of (potentially) shared transmission infrastructure assets, or in other words, assets that cannot be solely attributed to a single user.

- **Balancing Services Use of System (BSUoS) charges** – these charges relate to the costs incurred by the SO in its day-to-day operation of the NETS. It includes, for example, the costs incurred in the SO's action in the market to resolve constraints on the NETS.

Regulatory arrangement of transmission charges

1.7 NGET is obliged under their licence conditions to establish and keep under review appropriate transmission charging methodologies for the electricity transmission system[3]. The current licence obligations require NGET to have in place charging methodologies that, amongst other things, facilitate competition in generation and supply, and result in charges that, as far as is reasonably practicable, reflect the costs that have been incurred by licensees. These are part of the 'Relevant Objectives'[4].

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[2] Ofgem's approach for licensing offshore transmission involves the competitive award of new licences whilst, where possible, extending the principles of the onshore regulatory framework for the grid network in GB. The transitional tender regime is for projects where the transmission assets have been or will be constructed by the offshore developer, then transferred to the OFTO. Under the enduring regime tenders will be for OFTOs to design, finance, own and manage the new assets.

[3] These requirements are set out in the standard licence condition SLC C4 and SLC C5 of NGET's electricity transmission licence.

[4] As set out in SLC C5(5) of NGET's electricity transmission licence: (i) facilitate effective competition in the generation and supply of electricity, (ii) result in charges which reflect, as far as reasonably practicable, the costs incurred by transmission licensees in their transmission businesses, and (iii) as far as reasonably practicable, properly take account of developments in the transmission licensees' transmission business.

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1.8 Currently, it is NGET's responsibility to propose and consult on changes to the charging methodologies. NGET is required to keep the relevant charging methodologies under constant review and to propose changes where it considers that a modification would better achieve the relevant objectives. From 1 January 2011, charging methodologies will sit within the governance of the relevant industry code, and changes can be proposed by a wider range of stakeholders.

1.9 In the context of the charges relating to costs incurred by the TOs - Connection charges and TNUoS charges, Ofgem has two main roles. First, it sets the total amount of revenue that the TOs can earn through a regulatory price control; and second it approves the form of the method - known as the "charging methodologies" by which charges are determined (but not the level of individual charges).

1.10 In the context of the charges relating to costs incurred by the SO - BSUoS charges - Ofgem's role is also two-fold. First, it sets an incentive scheme for the SO such that the SO's allowed revenue includes financial rewards/penalties if actual costs are lower/higher than pre-set targets; and second, it approves the relevant charging methodology.

1.11 The current transmission charging methodologies have applied across GB since the introduction of the single electricity market through the British Electricity Transmission and Trading Arrangements (BETTA) on 1 April 2005.

1.12 BETTA extended the existing charging regime for England and Wales to include Scotland. However, the principle of cost reflective charging has been a feature of the Use of System charging approach in England and Wales since 1990 and has been a feature of NGET's charging methodology since then.

Connection charging methodology

1.13 Connection charges are calculated as the cost of providing and operating assets that are specific to an individual user. The level of connection charges is determined in accordance with the Connection charging methodology statement, prepared by NGET.[5]

TNUoS charging methodology

1.14 The current TNUoS charging methodology provides for wider access charges which vary by location, reflecting the costs that users (Generation and Demand) impose on the grid. Transmission investments and costs are largely driven by the distance over which power is transported. This means that a user will impose more costs if they are positioned a significant distance away from the existing transmission system. It also means that users will pay more if they source or send their electricity over large distances.

1.15 Access charges are currently split into two component parts; a locational element and a residual element. The locational element covers all investments in "locational" assets such as lines and cables (historic or new) which provide grid access. To provide greater stability, and for administrative simplicity, tariffs are grouped into pre-determined geographic "zones" and a zonal average is calculated. In the case of generators, the locational element of transmission charges reflects the zonal average long-run forward-looking costs of connecting an incremental

[5] It is available from NGET's website: http://www.nationalgrid.com/uk/Electricity/Charges/chargingstatementsapproval/.

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mega watt (MW) of generation at a given point on the transmission network. The same principles apply to demand customers.

1.16 However, the locational element of the access charge does not recover the total amount of revenue allowed to the companies. This is because:

- the transmission network is not always optimally sized[6], and
- because the network comprises "non-locational" assets, such as substations, that contribute to overall security.

1.17 Hence, once the locational tariff has been calculated, a non-locational correction factor – generally called a residual charge - is applied to the tariffs. The operation of this correction factor ensures that 27% of total revenue is recovered from generators and 73% is recovered from demand customers.

1.18 The locational tariff part of TNUoS charges tends to be the focus of attention and debate. The detailed information on the model and the methodology that NGET employs to calculate charges for use of the transmission system in GB on behalf of the three existing TOs, including a description of the underlying assumptions, can be found in the Statement of the Use of System Charging Methodology published by NGET on its website.[7] A high-level description is given below of the main building blocks – 'local generation tariff', 'wider generation tariff' and 'wider demand tariff' - of the TNUoS locational tariff.

Local generation tariff

1.19 All directly connected generation will be levied a Local TNUoS tariff. This generation TNUoS tariff reflects the costs of the infrastructure assets that are local to the generator as opposed to the assets in the deeper transmission infrastructure known as the main interconnected transmission system (MITS). The local TNUoS tariff consists of two elements. The first represents the cost of the first transmission substation that the generator is connected to. Second, for a generator that is not immediately connected to a MITS substation, its local TNUoS tariff will also include an element representing the costs of the circuit linking the local substation to the nearest MITS substation.

Wider generation tariff

1.20 For wider infrastructure, the NETS is divided into generation charging zones and demand charging zones. All generators are levied a Wider TNUoS tariff according to the zone in which they are located.

1.21 NGET uses a loadflow model to calculate the marginal impact of an increase in demand or generation at each connection point (known as 'node') on the NETS, based on a study of the conditions of the peak demand level. This impact is first expressed as physical quantities of MWkm, which is the concept of the amount of electricity transmitted over certain distanced. This quantity is then converted to costs by taking inputs of the unit costs of transmitting electricity over various types of transmission circuits relevant to parts of the NETS, for example, overhead line and underground cables at various voltage levels.

[6] Due to the "lumpy" nature of transmission investment decisions, which is not always matching the changes of generation and demand charges. Also, generation and demand can continue to change in the lifetime of transmission assets.
[7] http://www.nationalgrid.com/uk/Electricity/Charges/chargingstatementsapproval/.

1.22 The nodal incremental costs are then averaged over defined zones. For demand tariff, the zones are the same as the Grid Supply Point Groups. Demand zone boundaries have been fixed and relate to the Grid Supply Groups to which the Grid Supply Point is allocated for energy market settlement purposes. There are 14 GSP groups.

1.23 For generation tariff, the zones are defined according to criteria, such as that all nodes within a zone are within a maximum +/- £1/kW nodal costs range, and that all nodes are geographically and electrically proximate. To provide stability, generation zones are typically fixed over a price control period. There are currently 21 generation zones.

1.24 The averaged zonal tariffs are multiplied by relevant security factors to reflect the redundancy of transmission assets required to secure the system against a set of contingency conditions defined in the security standard.

Offshore

1.25 Offshore 'Local' TNUoS tariffs have the same structure as onshore 'Local' tariffs, i.e. contain a substation and circuit element reflecting the offshore link from the offshore platform to the onshore network. However, offshore Local tariffs are based on recovering project specific costs of the offshore links[8]. Onshore, the local circuit and local substation elements are derived from average generic cost analysis for the relevant design and type of circuit and local infrastructure substation assets which are required for each generation connection.

Wider demand tariff

1.26 There is no 'Local' distinction in the TNUoS tariffs levied on demand users. Instead, demand users are subject to the locational wider demand tariff and the non-locational residual tariff. The Wider TNUoS tariff for demand is broadly equal and opposite of that for generation, except for that there is a de-minimus level demand charge to avoid the introduction of negative demand tariffs.

1.27 Once the tariffs are calculated, TNUoS charges are levied on the basis of transmission capacity booked by them (Transmission Entry Capacity)[9] in zones where generation TNUoS tariffs are positive, and the average of their outputs during the three defined settlement periods of high output levels between November and February.

1.28 For large demand users that take power directly from the transmission network, their TNUoS charges are levied on the basis of their half-hourly metered consumption on the three highest demand periods occurring during November to March; each peak period being separated by at least 10 clear days (which is known as the 'Triad' period). All remaining demand users' energy consumption is measured on a non half-hourly (NHH) basis. These users are liable for an energy consumption tariff[10].

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[8] The charge setting process takes into account the capital cost, ratings, and layout of the circuit (some of which may by physically onshore) and certain offshore substation assets that will be owned by the OFTO, all of which will be identified through the competitive tender process.
[9] The chargeable capacity for generators is based on the user's highest TEC within year multiplied by the effective tariff.
[10] Energy consumption tariffs are determined by first calculating the revenue that would be collected in each demand zone if all demand were half-hourly (circa 66 GW), then deducting from this the expected revenue to be

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1.29 The table below summarises the relevant geographic zones and provides a schedule of the tariff levels currently applicable for each category of user (both generation and demand). More information is available in NGET's charging statement: http://www.nationalgrid.com/NR/rdonlyres/B757A2EA-CEEA-4A37-B9CA-91A0F0C68C5F/40465/UoSCI6R0Final.pdf

Table 1: Schedule of TNUoS Generation and Demand tariffs 2010/11

Generation TNUoS			Demand TNUoS			
Zone No.	**Zone Name**	**Zonal Tariff (£/kW)**	**Zone No.**	**Zone Name**	**Zonal Tariff (£/kW)**	**Consumption (p/kWh)**
1	*North Scotland*	**20.077673**	*1*	*Northern Scotland*	**5.865932**	**0.790954**
2	*Peterhead*	**18.708975**	*2*	*Southern Scotland*	**11.218687**	**1.547861**
3	*Western Highland & Skye*	**22.790380**	*3*	*Northern*	**14.523126**	**1.993796**
4	*Central Highlands*	**17.633272**	*4*	*North West*	**18.426326**	**2.552189**
5	*Argyll*	**13.339264**	*5*	*Yorkshire*	**18.344745**	**2.520788**
6	*Stirlingshire*	**13.436032**	*6*	*N Wales & Mersey*	**18.891869**	**2.625780**
7	*South Scotland*	**12.485883**	*7*	*East Midlands*	**20.934125**	**2.886193**
8	*Auchencrosh*	**10.909540**	*8*	*Midlands*	**22.692635**	**3.184194**
9	*Humber & Lancashire*	**5.416173**	*9*	*Eastern*	**21.835099**	**3.026211**
10	*North East England*	**8.792347**	*10*	*South Wales*	**22.524989**	**3.028765**
11	*Anglesey*	**6.171408**	*11*	*South East*	**24.633810**	**3.377343**
12	*Dinorwig*	**5.497379**	*12*	*London*	**26.756942**	**3.602492**
13	*South Yorks & North Wales*	**3.594137**	*13*	*Southern*	**25.494450**	**3.537180**
14	*Midlands*	**1.564328**	*14*	*South Western*	**26.057832**	**3.553243**
15	*South Wales & Gloucester*	**0.391732**				
16	*Central London*	**-6.414672**				
17	*South East*	**0.806124**				
18	*Oxon & South Coast*	**-1.362801**				
19	*Wessex*	**-2.635277**				
20	*Peninsula*	**-5.871777**				

collected from the forecast zonal HH triad demand (circa 16 GW), and finally dividing this remaining amount by the NHH demand charging base in the zone.

BSUoS charging methodology

1.30 BSUoS charges are subject to an incentive scheme which is currently determined on an annual basis. Under this scheme, a target level of costs is agreed with NGET. In the event that actual costs exceed this target, the additional expenditure is borne by NGET, generators and suppliers. In the event that costs are lower than the target, the benefit is shared amongst NGET, generators and suppliers.

1.31 BSUoS charges are calculated for each settlement period on a £/MWh basis and are charged equally to generators and suppliers (i.e. 50/50) based on their metered volume in the relevant period. BSUoS charges do not vary by location.

Revenue information

1.32 The table below provides an indication of the current forecast of revenues that NGET is expecting to collect for each category of charge levied on users of the electricity transmission system in accordance with the relevant charging methodologies during 2010/11.

Table 2: Current electricity transmission forecast revenues 2010/11

2010/11	**TNUoS**	**Connection**	**BSUoS**	**Total**
Revenue (£m)	~£1,600m	~£150m[11]	~£800m	**~£2,550m**

2. Electricity transmission connection arrangements

Current arrangements

2.1 The Connection and Use of System Code (CUSC) sets out the standard commercial terms between NGET and users of the NETS[12]. Users enter into bilateral agreements in the form set out in the CUSC which, amongst other things, set out works required to provide a user's access rights.

2.2 From 11 August 2010, following the implementation of DECC's enduring access reforms, the SO can offer terms for connection to the electricity transmission network based on a "connect and manage" approach. This enables new generation to connect to the network ahead of wider transmission system reinforcement, once all "enabling works" are complete. The enabling works continue to be based on the "first-come-first-served" approach.

2.3 The operational costs that the SO will incur in accommodating the connection of generation in this manner (i.e. before full reinforcement of the wider network is complete) will be shared across generators and suppliers.

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[11] Comprising of ~£100m for Post Vesting and £50m for Pre-Vesting connections.
[12] More detailed information on the principal rights and obligations in relation to connection to and/or use of NETS can be found in the CUSC document available on NGET's website: http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/contracts/

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Final sums

2.4 Once a generator has entered into a contractual agreement with the NETS SO it may be required to provide pre-commissioning 'User Commitment', i.e. financial security against the transmission system reinforcement works identified in its bilateral agreement. This seeks to ensure that consumers are protected from the risk of stranded assets if the project does not go ahead and there are 'abortive costs' associated with reinforcements that may no longer be necessary. The abortive costs that could be incurred if a user terminates prior to connection are known as 'Final Sums'.

2.5 Figure 1 below shows the key feature of Final Sums in the pre-commissioning period, which is that a generator's liability closely matches the expenditure profile of the relevant TO. At the point when an application for Transmission Entry Capacity (TEC) is made, only a small administrative fee is levied on the applicant. From the point that the generator enters into an agreement with the NET SO, a generator is liable to provide security for the works that it has triggered in the event that it terminates from the system. As construction works commence the generator is liable to provide security cover for the costs the relevant TO has incurred, ramping up as construction progresses. At the point immediately before construction finishes, the generator is liable to 100% of the associated reinforcement costs.

2.6 NGET estimates, on a six monthly basis, the level of Final Sums individual users will be asked to secure. This is based on the costs that will be incurred by NGET in the following 6 month period, and may include transmission works triggered solely by the individual user, and/or a share of works required to connect a number of users[13].

2.7 Under Final Sums, Security may be provided in a number of forms, e.g. letter of credit, parent company guarantee, cash payment held in escrow (and refundable at the point of connection). If security is not provided in the timescales set out in the CUSC, NGET may seek to terminate the user's agreement. Users are only required to pay money under Final Sums in the event that there are abortive works. Should the user terminate and NGET can re-use the assets for another user, then these are not deemed to be abortive works and the terminating user will be refunded the equivalent amount.

[13] A feature of the current Final Sums arrangements is that some projects are grouped together when identifying the transmission works necessary for their connection. This approach is termed 'clustering'. This mechanism is adopted when a number of applications for connection to the transmission system are being assessed at the same time.

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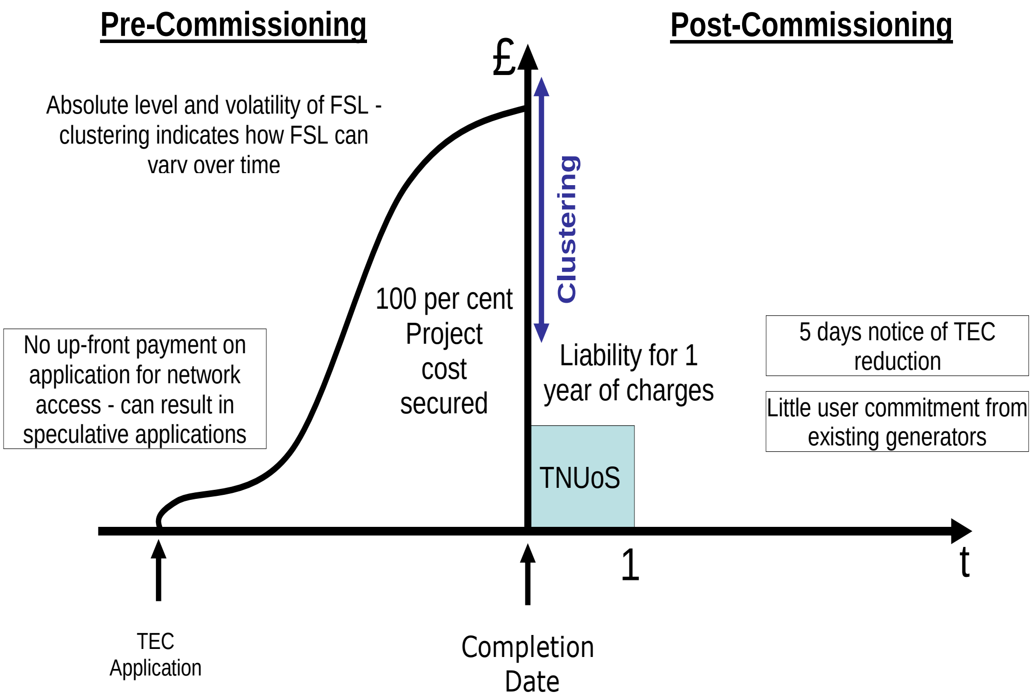
Figure 1: User commitment under Final Sums



Interim Generic User Commitment Methodology (IGUM)

2.8 In August 2006, NGET introduced a voluntary alternative approach for providing pre-commissioning user commitment. This approach is NGET's Interim Generic User Commitment Methodology (IGUM). IGUM effectively de-links the security requirement from the specific works associated with an individual user's connection. Instead of providing Final Sums reflecting the actual costs of specific transmission works, a party can opt to provide user commitment calculated on a generic basis.

2.9 Under IGUM, once a generator enters into a connection agreement with the NET SO it becomes liable for a charge, the 'User Commitment Amount'. This charge increases from £1/kW in year one, increasing by £1/kW each year up to a maximum of £3/kW in year three. Following consents being granted (the "trigger date"), users are required to secure a 'Cancellation Amount', payable in the event that the generator terminates its connection agreement. The full Cancellation Amount is calculated as the equivalent of ten years[14] worth of TNUoS in the zone in which the user is seeking to connect. The Cancellation Amount to be secured in a year ramps up over a four year period, initially at 25 per cent of the total Cancellation Amount, increasing to 50 per cent, 75 per cent and then 100 per cent in the final year before being allocated Connection Entry Capacity (CEC) and Transmission Entry Capacity (TEC) and proceeding to connection (see figure 2 below).

2.10 Like Final sums, security can be provided in a number of forms. However, unlike Final Sums, the monies paid under IGUM are not refundable in the event of termination.

[14] The multiplier used on TNUoS charges to derive the total amount that a generator is liable for is determined by National Grid at the beginning of each price control period. This multiplier is set in accordance with the level of investment which needs to be covered based on the current connection offers for the price control period 2007-12.

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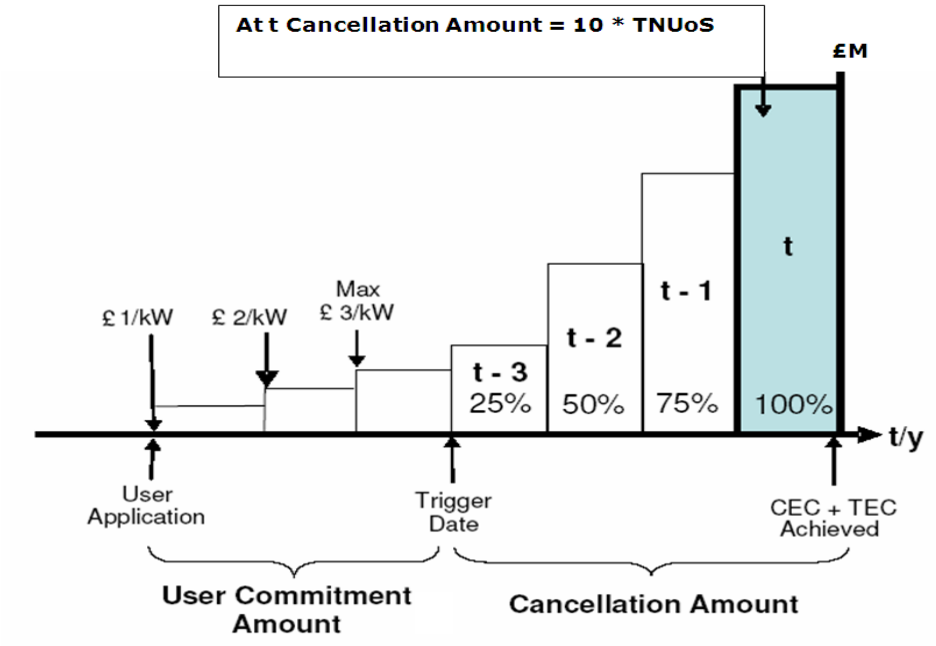
Figure 2: User commitment under IGUM



2.11 Once connected, user commitment for all generators is in the form of an obligation to pay TNUoS for a minimum of 2 years.

Areas of ongoing work

2.12 DECC's 'Connect & Manage' model will address issues associated with the queue for wider system access. However, government has asked the industry and Ofgem to take forward areas of work that include the following:

- Transition: DECC has requested that the TOs put in place all the necessary procedures, including changes to the STC Procedures and other documentation, to enable the transition to the Connect and Manage regime in the six months from 11 August 2010. In addition, over the same transitional period, all generators with an Interim Connect and Manage agreement will automatically be given an offer to move to the enduring regime[15]. This will result in a significant number of revised and new connection offers to be issued and accepted.

- User commitment: Consideration of pre-commissioning user commitment was specifically outside the scope of the government's enduring access reforms. NGET has recently consulted upon its approach to Final Sums, with a view to ensuring that the arrangements are non-discriminatory, proportionate, stable, transparent and that the risk is targeted on the appropriate parties. Following that consultation, NGET has implemented an interim approach under which users are no longer required to secure wider works. NGET has set out the need to undertake further work to develop an enduring solution. NGET has also recently set out the interim approach to the application of IGUM for offshore generators (IGUM to apply onshore only, and Final Sums in relation to assets offshore). Again, NGET has set out that further work is required to establish an enduring solution.

[15] DECC has committed that the connection dates already offered to these projects will not be adversely affected.

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- Local queue management: it is important that the industry framework ensures timely delivery of the local or 'enabling' works required to connect generators, and that the transmission licensees have in place arrangements to ensure that the 'local' connection queue is managed transparently and in a non-discriminatory manner

- Access for distributed generation (DG): there is a need to review the existing approach to ensure that there is robust and transparent process for DG to gain appropriate access rights to the available transmission capacity

2.13 For the avoidance of doubt, the Project TransmiT will consider aspects of the current arrangements which fall outside the scope of the Government's work to develop and implement enduring reforms to the electricity grid access arrangements.

3. Gas transmission charging arrangements

Industry structure

3.1 The gas transmission system in Great Britain - the National Transmission System (NTS) - is owned by one privately owned network company, National Grid Gas (NGG), which has responsibility for developing and maintaining infrastructure required by users seeking to transport gas across the high pressure network in Great Britain.

3.2 Separately, a single System Operator (SO) is responsible for the day to day operation of the whole NTS and for the provision of additional network capability requested by users. This role is also performed by NGG.

3.3 The network companies (both TO and SO) are subject to regulation by Ofgem, with their duties and obligations set out in licence conditions and UK and European legislation.

Charging structure

3.4 The TO activity involves the provision of transmission capacity on the existing network at different locations in terms of entering gas onto, and exiting gas off, the NTS. Gas is brought onto the NTS at entry points and taken off at exit points; the shippers bringing the gas on and taking it off the system pay entry and exit charges, respectively.

3.5 Users of the NTS are subject to three main elements of transmission charges:

- **Connection charges -** these are charges for the provision of any assets required to connect a user to the NTS

- **TO charges** - these are charges for the provision and maintenance of transmission network assets. There are currently separate TO charges for shippers bringing gas on to (entry users) and taking gas off (exit users) the network:

  - TO entry users pay a capacity charge (which is determined by auction where minimum or reserve prices apply) to obtain the commercial right to flow gas onto the network at a given location and a commodity charge which is levied on actual flows (rather than booked capacity).

- TO exit users pay a capacity charge to obtain the commercial right to flow gas off the network at a given location

- **SO charges** - these are charges for the costs incurred by the SO in its day to day operation of the NTS, but they also include part of the cost of providing incremental capacity on the network. There are also separate charges for SO exit and entry users; however, these are currently set at the same rate.

Regulatory arrangement of transmission charges

3.6 NGG are obliged under their licence conditions to establish appropriate transmission charging methodologies for the gas transmission system[16]. The transportation charging methodology has to comply with objectives set out in the Licence under Standard Special Condition A5. These are to: reflect the costs incurred by National Grid, where charges are not determined by auctions; facilitate competition between gas shippers and between gas suppliers; take account of developments in the transportation business; and, promote competition between gas suppliers and between gas shippers (the 'relevant objectives').

3.7 Currently it is NGG's responsibility to propose and consult on changes to the charging methodologies. NGG is required to keep relevant charging methodologies under constant review and to propose changes where it considers that a modification would better achieve the relevant charging methodology objectives. From December 2010, charging methodologies will sit within the governance of the relevant industry code, and changes can be proposed by a wider range of stakeholders.

3.8 In the context of the TO charges Ofgem has two main roles. First, it sets the total amount of revenue that the TO can earn through a regulatory price control. Second, it approves the method by which the charges are determined (but not the individual level of charges).

3.9 In the context of SO charges relating to costs incurred by the SO, Ofgem's role is also twofold. First, it sets an incentive scheme for the SO such that the SO's allowed revenue includes financial rewards/penalties if actual costs are lower/higher than pre-set targets; and second, it approves the relevant charging methodology.

TO charging methodology

3.10 Capacity for those wanting to bring gas onto the NTS (entry capacity) is sold through a series of auctions. Shippers can bid for capacity at specific entry points from as far out as 17 years ahead, down to day ahead and on the day capacities. Entry capacity can be purchased in quarterly, monthly or daily blocks, depending on the nature of the auction.

3.11 Capacity for those wanting to take gas off the system (exit capacity) is purchased during an annual capacity application process. Current system users have been allocated enduring rights to flow gas off the system at specific points, and they pay exit capacity charges for these capacity rights. Users can change their level of exit capacity at a given exit point by giving advance notice to NGG; 14 months if they want to reduce their exit capacity levels, or 38 months if they want to increase their capacity levels.

[16] These requirements are set out in Standard Special Conditions A4 and A5 of NGG's gas transporter licence.

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3.12 Transmission costs are largely driven by the distance over which the gas is transported - entry auction reserve prices depend on the proximity to major demand centres and exit charges depend on the proximity to major supply sources. NGG's methodology calculates location specific entry and exit charges that are reflective of the costs that those users impose on the system. These charges are set on the basis of the long-run forward-looking marginal costs of NGG providing and additional unit of network capability at a given point on the transmission network.

3.13 Because of the differing manners in which entry and exit capacities are sold, the methodology calculates minimum auction reserve prices for entry capacity and administered charges for exit capacity.

3.14 The current methodology for TO charges recovers the allowed revenue equally between entry and exit charges. In practice, revenue from entry capacity auctions does not exactly recover the 50 per cent of TO allowed revenue. Any shortfall in auction revenue against the 50 per cent share of the TO allowed revenue is collected via a TO entry commodity charge. This is a per-unit charge based on the volume of gas flowed, except at storage points or short-haul allocations[17].

SO charging methodology

3.15 The current methodology for SO charges recovers SO allowed revenues from a number of charges including exit charges (mainly relating to additional exit capacity provided by NGG), entry charges (relating to entry capacity charges for additional entry capacity provided by NGG, interruptible capacity, firm capacity bought on-the-day and firm capacity that NGG releases in addition to its licence obligated amount) plus a number of other charges. The remainder of the SO allowed revenue after accounting for these charges is recovered through equal SO commodity charges for entry and exit. These are levied on the actual gas flows onto and off the transmission system.

Revenue information

3.16 The table below summarises the maximum NTS SO allowed revenue and the maximum NTS TO allowed revenue in respect of the current charging year (2010/11).

Table 3: Current gas transmission forecast revenues 2010/11

2010/11	**SO**	**TO**	**Total**
Revenue (£m)	£460	£590	**£1,050**

[17] An optional 'short-haul' tariff was made available to users in lieu of paying the TO and SO commodity charges. The rationale was that the short-haul tariff reflects more accurately the costs of transporting gas from large entry terminals to nearby exit points. It was argued that this removes the perverse incentive for the construction of independent pipelines and thus avoiding NTS charges, which could be inefficient outcome for all NTS users. Short-haul allocations are the flows of gas between entry and exit points where users have opted to pay the 'short-haul' tariff.

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Gas transmission charging issues

3.17 In recent years, the TO entry commodity element of the revenue recovered by NGG has been growing, and some shippers have expressed concern about the level and volatility of the TO entry commodity charge[18]. Project TransmiT will consider this and other aspects of the gas transmission charging regime, with a view to ensuring the consistent application of common principles. It will also consider the appropriateness of the incentive and credit arrangements around capacity allocation.

3.18 We are also mindful that, the future may see the growth in transportation arrangement for CO2, including on the back of the development of carbon capture and storage solutions. We will, therefore, consider the way in which charging arrangements for electricity and gas might need to be reflected in the charging arrangement for the transportation of carbon dioxide.

3.19 More detailed information on the methodology that NGG employs to levy charges for use of the transmission system in GB can be found on NGG's website: http://www.nationalgrid.com/uk/Gas/Charges/

4. Gas connection charging arrangements

4.1 There are three distinct processes that need to be completed before gas can flow into or out of National Grid's National Transmission System (NTS):

- the physical connection to the NTS has been completed and the measurement equipment has been validated;
- the operational agreement detailing the conditions for gas to flow has been signed by NGG and the shipper; and
- shippers have obtained sufficient capacity via the relevant Entry and Exit Capacity processes.

4.2 The connecting pipeline to the NTS can be built by developers, or it can be built by NGG. There is also the option of NGG subsequently taking ownership of a line constructed by a third party. Typically, NGG would be involved in feasibility studies with any party requiring capacity ahead of any design process being initiated.

4.3 The operational agreement will be largely determined by the design characteristics of the connection. The connection design and operational agreements are sorted out on a bilateral basis between the developer/shipper and NGG.

4.4 The arrangements for the connection of a facility to the NTS are given on NGG's connections website: http://www.nationalgrid.com/uk/Gas/Connections/ntsentry/

4.5 Shippers obtain the required entry and exit capacity through the entry auctions and exit application processes, as detailed in the previous section.

[18] For more detail, see the Ofgem decision letter on GCM19: http://www.ofgem.gov.uk/Networks/Trans/GasTransPolicy/TCMF/Documents1/GCM019_decision_SIGNED.pdf

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Next steps

We welcome responses to the call for evidence by ***Wednesday 17 November 2010***. All responses will be placed on our website unless marked as confidential. Please email your response to Project.TransmiT@ofgem.gov.uk.

Please contact Anthony Mungall (anthony.mungall@ofgem.gov.uk) or Lesley Nugent (lesley.nugent@ofgem.gov.uk) should you require any more information on the issues discussed in the call for evidence or this technical annex.

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