CONSULTATION DOCUMENT

GB ECM-12

Use of System charging methodology issues relating to GB participation in the Inter TSO Compensation (ITC) mechanism

October 2008

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1 Executive Summary

This consultation document highlights the charging issues associated with GB participation in the Inter TSO Compensation (ITC) mechanism and seeks wider industry views on possible changes to GB charging arrangements. Any proposals taken forward following this consultation will not alter the published tariffs for 2008/9.

The options identified in this document are by no means exhaustive and National Grid welcomes further variants. This consultation highlights some of the complex interactions between national charging mechanisms and wider pan European revenues recovery streams (e.g. ITC).

National Grid, on behalf of GB, makes a net payment into the ITC mechanism. This payment mainly compensates other Transmission System Operators, TSOs, for using their assets to support imports and exports to/from GB. It also includes a small amount to compensate other countries for losses they incur in hosting flows and a benefit that GB derives from reduced losses on the GB transmission system.

The philosophy behind the ITC mechanism and the related EC legislation is to avoid the need for explicit border fees. Therefore it is not considered appropriate to charge the costs imposed by ITC directly to Interconnector Users. To be consistent with the aforementioned approach on costs, we consider that benefit should not be directly credited to Interconnector Users.

National Grid is proposing that no change should be made to the changing methodology as a result of GB participation the ITC mechanism. This avoids inconsistent treatment of the revenues associated with the ITC mechanism and creation of a possible cross subsidy for imports and exports. As a result, Interconnector Users would remain liable for the same charges that a Generator or Supplier would if it was using the same connection point.

Interconnector Users and GB consumers are both benefiting from participation in the ITC mechanism. The total payment by GB into the ITC mechanism (~€12m) is much less than the charges that would have been levied on Interconnector Users if National Grid had not joined the scheme (~€18m). Avoiding these explicit import and export fees improves competition and the economic viability of trades across the interconnectors. Therefore the overall cost of production in GB is less and GB consumers have improved economic access to a wider market.

The document has been published on the National Grid charging website at the following address:

http://www.nationalgrid.com/uk/Electricity/Charges/modifications/uscmc/

National Grid will consider the issues raised by respondents to this consultation and discuss the conclusions with Transmission Charging Methodologies Forum. Following this, National Grid will either formally confirm the intention not to make any methodology changes through an open letter or alternatively take forward a proposed change such as that highlighted in Appendix 1 of this consultation.

2 Introduction

National Grid is obliged under its Transmission Licence:

(i) to make revisions to the Charging Statements in order that the information set out in the statements shall continue to be accurate in all material respects;

(ii) to keep the Use of System Charging Methodology under review;

(iii) to make such modifications of the Use of System Charging Methodology as may be requisite for the purpose of better achieving the relevant objectives, which are:

(a) to facilitate effective competition in the generation and supply of electricity and (so far as is consistent therewith) to facilitate competition in the sale, distribution and purchase of electricity;

(b) to result in charges which reflect, as far as reasonably practicable, the costs (excluding any payments between transmission licensees which are made under and in accordance with the STC) incurred by transmission licensees in their transmission businesses; and

(c) that, so far as is consistent with sub-paragraphs (a) and (b), the Use of System charging methodology, as far as is reasonably practicable, properly takes account of the developments in transmission licensees' transmission businesses.

Before making a modification to the Use of System Charging Methodology, National Grid is also required to consult with CUSC Users on the proposed modification for a period of no less than 28 days within which they may make written representations.

The purpose of this consultation document is to set out the issues and options available for modifying the Statement of the Use of System Charging Methodology to take account of GB participation in the ITC mechanism, and to seek further Industry views before deciding if a change is required.

Whilst not currently mandatory, the principles of the ITC mechanism are considered consistent with the objectives of Regulation (EC) 1228/2003 on 'Conditions for access to the network for cross-border exchanges in electricity' (the Regulation[1]). In addition to the GB legislative vehicles and industry frameworks, National Grid is also required to comply with EC Regulations.

Whilst the Regulation sets out a framework for mandatory guidelines for an ITC scheme, prior to these being implemented, the European Transmission System Operators (ETSO) association, with the support of the European Commission and all of the national regulators, have implemented a temporary ITC mechanism to run between January 2008 and December 2009[2]. One of the key objectives of the ITC mechanism is to remove the need for explicit border fees and therefore remove what is considered a significant barrier to pan European competition.

[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:176:0001:0010:EN:PDF
[2] http://www.etso-net.org/upload/documents/Explanatory%20Notes%20on%20ITC%202008-9.pdf

The revenue implications from joining the ITC mechanism are dealt with through National Grid's Transmission Licence. This consultation focuses on the GB charging methodology implications of National Grid joining the ITC mechanism rather than the allowed revenues implications. Ofgem have published a letter on the revenue implications[3].

3 The Regulation and ITC scheme

3.1 The Regulation

In this section we discuss the legal framework around the ITC mechanism and how this interacts with GB arrangements.

The aim of the Regulation is to set out fair rules for cross-border exchanges in electricity, thus enhancing competition across Member States. The ITC mechanism supports this by providing compensation for transits from a central fund. Transits are imports and exports that flow through a system i.e. do not originate in or terminate in that system. For the avoidance of doubt, the ITC mechanism does not compensate for gross imports and exports.

There are a number of clauses within the regulation that are particularly important in the context of charging for network access, these are discussed below. Note, Article 3 of the Regulation describes the principles of a mandatory ITC mechanism that would be established through Article 8 of the Regulation. However a mandatory ITC mechanism has not been established. Nevertheless, the main principles have been used to develop the voluntary scheme.

Principle objectives

'Article 3, 1. Transmission system operators shall receive compensation for costs incurred as a result of hosting cross-border flows of electricity on their networks', and

Article 3, 2. The compensation ….shall be paid by the operators of the national transmission systems from which cross-border flows originate and the systems where they terminate'

These are the high level principles adopted in the ITC mechanism: TSOs that host flows are compensated; the compensation is funded by the TSOs who cause the flows. Imports to, and exports from the GB system are considered to cause flows on other systems, with the result that GB is an overall net contributor to the mechanism. The ITC payment can be considered as the cost of using external transmission systems.

The ITC payment is essentially the net cost that GB imposes on other transmission systems and the cost received for transits (which can only be negative for losses i.e. a benefit to be paid into the fund).

Applicability of National Tariffs

'Whereas, (13) 'It would be inappropriate to apply distance related tariffs, or, provided appropriate locational signals are in place, a specific tariff to be paid only be exporters or importers in addition to the general charge for access to the national network'

[3] http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/Charging/Documents1/The%20Inter-TSO%20Compensation%20scheme%20for%202008%20and%202009.pdf

This suggests that the basis of the scheme is that imports and exports should not be subject to a specific charge. Furthermore, locational charges can be levied, along with a general charge for access, providing they are levied on all users.

Non-discrimination is a corner stone within the GB framework, providing a level playing field through cost reflective charges to ensure the most efficient outcome for end consumers (users are exposed proportionally to the costs they cause). This is further backed up by Article 4, 5 of the Regulation which specifically prohibits *specific* network charges for declared transits of electricity:

'Article 4, 5. There shall be no specific network charge on individual transactions for declared transits of electricity.'

In previous industry meetings (Transmission Charging Methodologies Forum and Charging Issues Sub Group) some representatives have suggested that with the introduction of an ITC mechanism, all charges on exports and imports should be removed. National Grid does not agree with this position and is mindful of the negative impact such a change could have on competition.

The TNUoS charge, which is the GB charge for access, is applied to all parties who have network access irrespective of the country of origin and includes a locational element. National Grid's view is that removing all charges on imports and exports is not a requirement in the Regulation, however, removing inappropriate charges that frustrate competition is. The vast majority of imports and export are for national use, not charging for these in the same manner as other internal trades would frustrate competition.

National Grid is mindful of the charging arrangements on other transmission systems (which vary significantly); however, the focus is on maintaining a functioning competitive market in GB, within the active framework of the Regulation.

Article 4 also raises the issue of transaction based charges. The regulation requires that charges / compensation payments are based on the physical flows, not transaction charges. Historically, within Europe, import and export charges were levied on bidirectional MWh transactions, thus a net flow of zero may still incur a significant charge. The charging arrangements in GB are not based on MWh transactions, but based on physical flows or capacity rights. Within the context of the GB framework for the purposes of this consultation, we regard a physical capacity right with compensation equivalent to physical flow.

Setting of National Tariffs

'*Article 4, 3. When setting charges for network access the following shall be taken into account:*

- *payments and receipts resulting from the inter-transmission system operator compensation mechanism*
- *actual payments made and received as well as payments expected for future periods of time, estimated on the basis of past periods'*

'4. Providing that appropriate and efficient locational signals are in place, in accordance with paragraph 2, charges for access to networks applied to producers and consumers shall be applied regardless of the countries of destination and, origin, respectively, of the electricity, as specified in the underlying commercial

arrangement. This shall be without prejudice to charges on declared exports and declared imports resulting from congestion management referred to in Article 6.'

Article 4 makes it clear National Grid should take account of payments and receipts from the ITC mechanism when setting TNUoS tariffs / access charges. This is consistent with Licence Condition C 5 5(c), taking account of changes to the business.

Principles of how these charges could be taken account of in GB arrangements are discussed in sections 4, 5 and 6 of this consultation. However, neither Article 4,3 or Article 4,4 prohibits charges being imposed on cross border flows of electricity. Indeed they require that charges be applied regardless of the destination or origin. This is also consistent with the licence objective, C7, on prohibition of discrimination.

National Grid considers that the above requirements of the Regulation are consistent with the relevant objectives associated with charging in the transmission licence, in that they aim to facilitate competition; seek to be cost reflective (as far as practicable); and costs to the business should be taken account of in network charges.

National Grid is mindful of the possibility of overlapping revenue streams i.e. recovering for a service through network charges and also through the ITC mechanism. The overlap in revenue streams is complicated because the GB arrangements include a relative signal, the absolute value of which is set by the locational charge and the ratio of generation to demand recovery (the G/D split). National Grid believes that removing the signal within the GB arrangements for an individual User or class of Users would frustrate competition.

Respondents should recognise that the charging arrangements across member states vary widely. The main differences are in: the application of locational charges; the split of revenue recovery between generation and demand; the depth of connection charging (that interacts strongly with G/D split) and whether the bulk of the transmission revenue is recovered through a kW or a kWh charge (often linked to whether users 'book' capacity or not). For this reason the Regulation is relatively high level and avoids prescribing a 'single right answer' for national arrangements, but rather sets out principles.

National Grid welcomes industry views on the issues highlighted above. In particular, further views on the consistency and interaction of the Regulation and the GB charging arrangements.

3.2 The ITC mechanism

This section provides an overview of the voluntary ITC mechanism. This is a two year scheme that runs from January 2008 to December 2010. The net GB annual payment is in the order of €9.357m per annum (£7.42m[4]). The final cost may vary slightly given the linkage to real time flows (including forecast flows from perimeter counties outside the mechanism) and changes to the exchange rate.

There are two main revenues taken account of in the ITC mechanism, the charges that GB is required to pay for using other transmission systems (to facilitate imports and exports) 'the contribution'; and the receipts associated with facilitating transits on

[4] Based on a BoE published rate for 9 May 2008 of 1 EUR = 0.7930 GBP. This has a 52 high and low of 0.8073 and 0.6687 respectively, which introduces a potential £1.3m error (up to 20% base on the lower rate)

the GB transmission system 'the compensation'. In practice, these elements are bundled within the mechanism and therefore difficult to disaggregate. The actual payment is the net of the contribution and compensation. The real time component of each of theses (losses) can be negative (i.e. negative compensation which would be a payment).

Within the ITC mechanism there are two discrete elements, infrastructure and losses. These are treated separately given their very different nature, and both have different contribution and compensation rules. Therefore whilst the net payment may be positive, an individual element may negative. The mechanism, as a whole, nets to zero (sum of all members contribution and compensation). Overall, the mechanism accounts for nearly €700m of infrastructure costs and €90m of losses payments.

The mechanism only provides compensation in relation to transits i.e. there is no compensation for imports and exports which are for national use. Exports and imports that are for national use are considered to cause transits on other transmission systems (so drives the contribution by importers and exporters). For example:

In the above situation there is a 100 MW flow through the GB transmission system. In the context of an ITC mechanism system, physical flows rather than contractual paths are important. The ITC mechanism deals with the compensation for the costs imposed on the GB system of facilitating this 100MW flow. The extent to which theses cost are dispersed through Europe (who pays for them) is also a function of the ITC mechanism. At an individual country level the individual national charging regimes dictate how any payment is funded or receipt redistributed.

The ITC mechanism also seeks to recover from GB the costs imposed by the net 900 MW import (for national use) on other transmission systems. The mechanism works on physical metered flows so there is no need for any contractual linkage between the import and export to create a transit.

The Regulation does not dictate what the corresponding national regimes should be, although it does indicate some restrictions on and principle of national charges e.g. no explicit border fees, proposed G/D split maxima. In France for instance, we understand the net ITC payment is funded by a charge on all national generators. This appears to be appropriate for a country that is a large exporter and a zero G

infrastructure charge (i.e. to avoid host demand cross subsidising the export from host generation).

Infrastructure element

The ITC mechanism seeks to disperse the cost of transits based on a 'cause and effect' principle. The split between national use and transit use for GB is approximately 10:1 respectively i.e. GB imports and exports significantly more than it is transited (as per the scenario above). Therefore, the net cost of the ITC is a payment, largely dominated by the effect of imports.

The transit on the GB system is normally in the opposite direction to the natural flow (as in the scenario above: the transit is south to north, but the real system flow is north to south). Theoretically, this can be viewed as a benefit rather than a cost, similar to the treatment of southern generation in GB locational charges. However, the current ITC mechanism has a collar of zero, i.e. it does not compensate for transit flows on infrastructure when this would result in a negative payment. Therefore National Grid does not pay an infrastructure benefit into the scheme. This is an important point to note because the GB charge already includes a locational benefit.

The compensation for infrastructure is based on detailed analysis that ETSO has performed forecasting costs to TSOs who cause transits and those that are affected by them. The basic methodology used calculated a sensitivity factor for each country to flows between combinations of every other country. These sensitivity factors are then combined with simulated flows and regulated assets costs to establish a level of compensation.

The contribution for infrastructure was based on net imports and exports; however, it also includes some adjustments to improve the stability of the mechanism and link cause to effect (i.e. GB charges are weighted to the infrastructure cost of transmissions systems near to GB). GB generally benefits from this targeted approach as the unit cost for transmission in France is relatively low.

Losses

The methodology for dealing with losses is called WWT, 'with and without transits'. Within this methodology two AC load flow studies are performed, one with the transit present and the other with the transit removed. From the earlier example, this would be a load flow with 1000MW import / 100MW export and then a load flow with just 900MW import. The losses in each study are compared, with the difference attributed to the effect of transits. The quadratic nature of losses is also factored in (i.e. the calculation is scaled for average rather than marginal losses), noting the objective of the mechanism is fair cost recovery. This avoids treating transiting parties as the 'last person on'.

The calculated volume of losses is then multiplied by a regulatory or national energy price to establish the required compensation. The prices are audited through an internal ETSO process. If the volume of losses is negative, because the transit flow has a beneficial effect, then the compensation would be negative. The calculation is performed on 72 snapshots throughout the year and weighted to ensure reasonably representative results.

The losses fund is paid for by all importing and exporting TSOs on a 50/50 sharing factor based on the net import and net export in each hour of the year. As mentioned previously, in GB the transit flow is normally south to north, and GB is generally an importing country. This results in a net payment, sum of the impact on other TSOs (contribution) and the benefit to the GB system (-ve compensation). Overall the net

cost as a result of losses in the mechanism is approximately a 13% of the total mechanism[5].

For GB, approximately 88% of the net cost to GB is as a result of transit costs on other transmission systems (including losses compensation on other Grids). The remaining 12% is the negative compensation for losses on the GB transmission system[6] i.e. losses on the GB system are approximately 25GWh p.a. less due to transits.

4 Impact on TNUoS residual

For the purposes of this consultation, we have assumed that all revenue for the ITC mechanism will be allowed for in the Maximum Allowed Revenue (MAR), forecast MAR is used to set TNUoS tariffs. A MAR increase, with no additional assets included in the transport model, effectively adds to the amount recovered through the residual.

It was discussed at TCMF whether the losses component should be passed through to the BSC, or even possibly through BSUoS. The absolute cost of losses within the ITC mechanism is in the order of £1.5m (contribution and compensation). Following discussion at TCMF it was concluded that the cost of creating additional revenue flows and mechanisms for losses in the BSC would not be proportionate to any benefits (which would be a fraction of the cost). Furthermore, given that losses are dealt with by adjustment to metered volumes rather than explicitly charged out, it is not clear where the additional charge would be passed through to.

The most efficient and proportionate option is to pass the whole cost through TNUoS. This approach is also consistent with taking account of ITC payments in charges for network access as required by Article 4,3 of the Regulation.

Across a 75 GW generation and a 55 GW demand charging base, with a 27:73 generation / demand split, the approximate annual cost of participation passed through the residual is 2.5p/kW and 9.3p/kW for generation and demand respectively (based on a £7m ITC sum).

National Grid welcomes other proposals for passing through the ITC payment which are consistent with both the Regulation and the Transmission Licence.

5 GB methodology and ITC mechanism

In this section, we discuss the interaction between the ITC payments and TNUoS charging on the GB system and if this should lead to adjustments to interconnector deemed volumes for the purposes of TNUoS charging. In previous Industry meetings this was discussed as an option to avoid possible 'double counting' of revenues, although at that early stage it was not clear how the ITC mechanism would deal with negative benefit for infrastructure.

The ITC methodology suggests that GB benefits from a counter flow transit, the mechanism itself limits this to real time costs (i.e. losses). Therefore the net payment

[5] The total gross compensation in the mechanism is €698m for infrastructure and €92m for losses

[6] The GB losses benefit (negative compensation) is €1.088m, so the exact figure is 11.63% of payment of losses benefit

includes a small amount to cover negative compensation for losses but no negative compensation for infrastructure.

With no change to the charging methodology, National Grid would continue to charge Interconnector parties for flows that are theoretically dealt with through the ITC mechanism, i.e. the transit. Strictly speaking, the GB charge is not for flows but for capacity. One view is that to be consistent with the aims of the mechanism, the volume of transits should be removed from GB charging arrangements and left to the ITC mechanism. This view is complicated by the allocation of the residual and locational nature of the charge within the GB arrangements and Articles 4,3 and 4,4 of the Regulation. Such specific treatment could be considered as explicit charging.

Before addressing a number of scenarios to look at the interaction of ITC and TNUoS it is worth reviewing how in GB the charges are derived and how the locational and residual elements interact.

5.1 Derivation of current GB charges

This section explains how GB charges are calculated. The first step in calculating GB charges is to establish the locational differentials. This is carried out in the DCLF transport model. This adds 1MW on at each node and essentially removes it at the centre of the system (the hub, which is set to zero). This provides the locational differences (differentials) shown in Chart 1 below. The important point here is that demand and generation are equal and opposite and also that the hub is common to both. The hub is chosen in the DCLF program as the most connected node to simplify the calculation. In terms of calculating the final GB tariff, this initial hub point is not a factor.

The charts are annotated with Sellindge and Auchencrosh to show that the model sees both generation at Sellindge and demand at Auchencrosh as benefits to the system, ignoring the interaction of the residual. This is similar what would be expressed in an uncollared ITC mechanism (infrastructure).

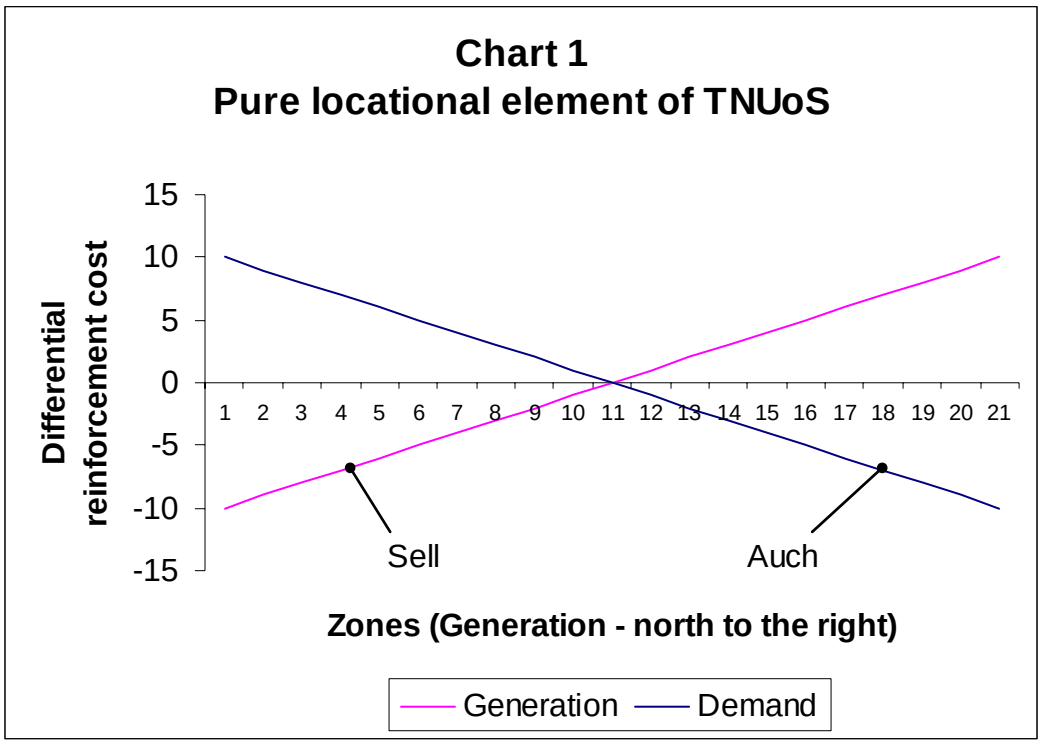
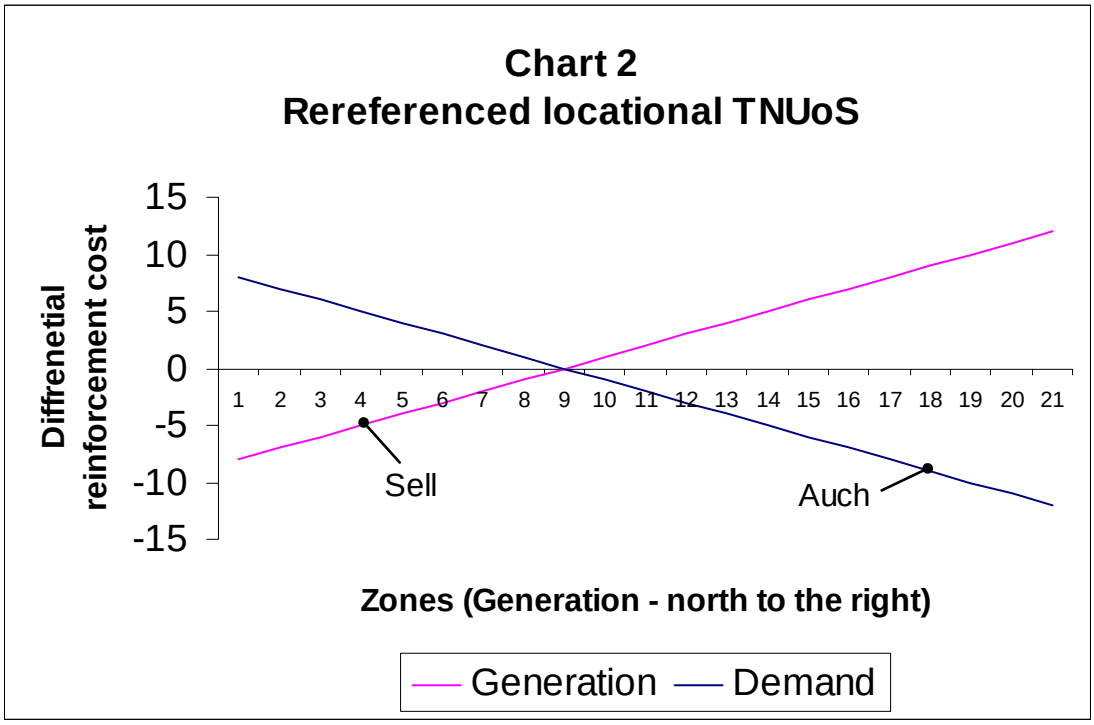


Chart 1 demonstrates that the demand signal is the negative of the generation signal. In practice, demand and generation are grouped by different zones and then, within these zones, the tariffs are weighted by demand and generation so they do not line up exactly. The zones in this simple model are not those in the full TNUoS model, but have been simplified to demonstrate the principle.

The next step is for the charging model to adjust these tariffs by adding a fixed number of MWkm to generation and subtracting this from demand to ensure the correct revenue proportion is recovered from generation and demand (27:73 respectively). This step is known as 'referencing' and essentially moves the hub of the system. Referencing is shown in Chart 2 below.



In this simple model the referencing has the effect of moving the hub southwards.

The final step in producing the actual TNUoS tariff is to add the residual element. The residual element ensures correct overall cost recovery. This is added in a 27:73 proportion to generation and demand respectively on a non locational basis. The difference between Chart 2 (above) and Chart 3 (below) demonstrates this step.

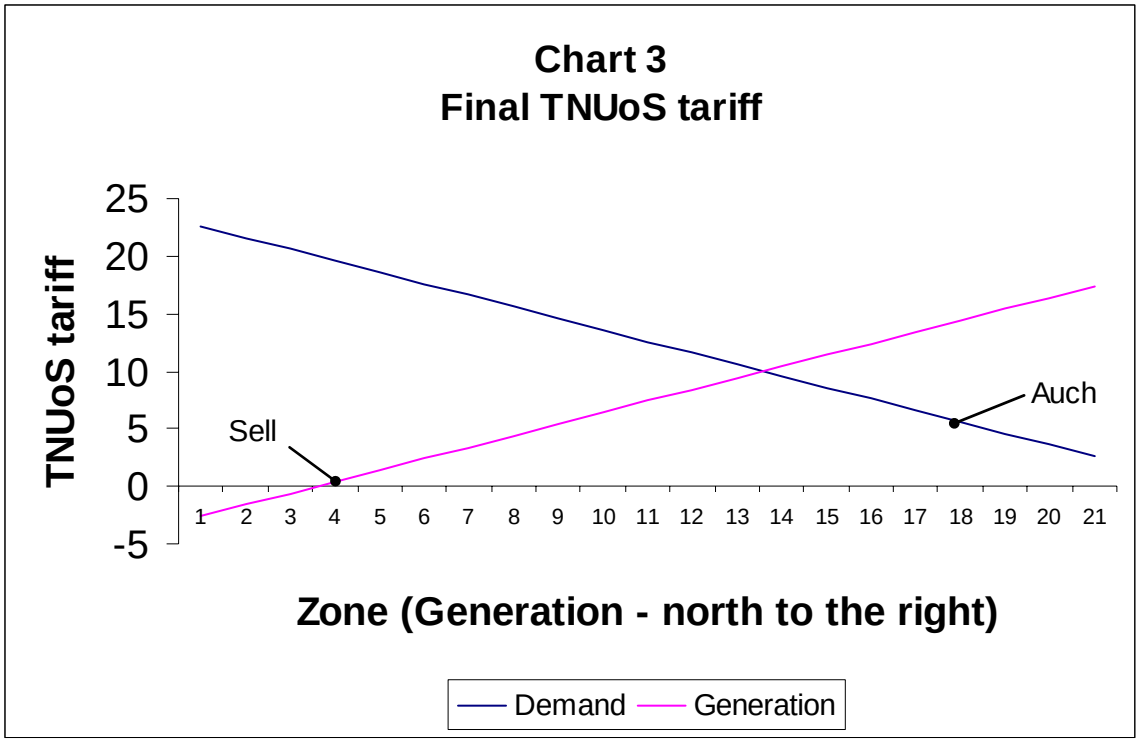


Chart 3 show that the differential (slope of the chart), that provides the locational signal is maintained through out the charge setting process. This slope represents the incremental cost of reinforcing the network.

The residual effect

On chart 1 both demand at Auchencrosh and generation at Sellindge have an absolute benefit (negative cost). This is reflected through the ITC in that the transit from Sellindge to Auchencrosh has a negative impact on GB costs. However, after the addition of the residual, both GB tariffs are positive, indicating no benefit overall.

Therefore adding the residual interacts with the economic signal that generation receives relative to demand at any node on the system (it creates the embedded benefit). This is a key consideration when comparing the GB tariffs and the ITC mechanism.

Unit cost effect

The ITC is designed for cost recovery and allocation, not to provide as an economic signal per se. The infrastructure unit cost (akin to the expansion factor) used in the ITC mechanism is based on the regulated cost of a system divided by the sum of total MWkm used on that system (giving €/MWkm). The apportionment of the total cost to transit is then this unit cost multiplied by the volume of transit in MWkm, giving the cost of transits (ITC compensation). This approach avoids the need for separate residual recovery.

The GB methodology uses an incremental unit cost (marginal cost assets cost multiplied by a security factor) rather than a regulated unit cost. Use of the incremental approach requires a separate residual recovery mechanism to ensure correct cost recovery.

The two differentl approaches ‘value’ the costs and benefits established in a load flow models (expressed in MWkm) differently, the higher the unit cost the higher the

value. The incremental methodology is considered as forward looking, whereas the regulated unit cost used in the ITC is a historic based figure. ETSO parties generally support the regulated unit cost as it is perceived to be a fairer treatment of total costs between national and internal users[7]. The current Regulation implies that the costing principle should be weighted to a more forward looking methodology (Article 3, 6)[8].

These different unit costing methodologies, along with the treatment of the residual, make it very difficult to reconcile absolute results of the ITC mechanism with the GB charging methodology.

GB charges at import and export locations

The data below is actual data taken from charging year 2007/08. Note the charges for demand and generation are not symmetrical as in the charts above because they are grouped in different zones and the actual referencing calculation is performed on MWkm not tariff. Also in this year, referencing moves the hub to the right rather than to left in the example in charts.

I/C connection	Demand zone	Demand* tariff £/kW	Generation Zone	Generation tariff £/kW
Auchencrosh	2	6.36	5	10.14
Sellindge	11	20.07	17	0.91

*includes 5.5p/kw small generator discount

Sub dividing the tariffs into locational and residual elements:

I/C connection	Demand Locational*	Demand residual	Generation locational	Generation residual £/kW
Auchencrosh	-7.75 (-10.66)	14.06	6.27 (9.17)	3.87
Sellindge	5.96 (3.06)	14.06	-2.96 (-0.05)	3.87

*figure in brackets is the unadjusted zonal tariff i.e. pre adjustment for 27:73

From the figures above, the charging model indicates that an import at Sellindge (generation) and an export at Auchencrosh (demand) both have a beneficial impact on the transmission system, in terms of locational assets. The ITC mechanism also sees this benefit although it caps the resulting compensation at zero.

The reason that both charges are positive in practice is due to the addition of the residual (non locational elements) as discussed above. For a 150MW transit, south to north, the locational (pre referencing) benefit would be approximately £1.6m. For the same transit after referencing and adding the residual there would be a charge of £1.1m. The difference of £2.7m is the sum of residual multiplied by the transits.

5.2 Interaction of GB charges and ITC mechanism

[7] http://www.ceer-eu.org/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/ELECTRICITY/Inter-TSO%20Compensation%20Guidelines/RR/E06-PC-10-13_etso%20Comments_ITC_guidelines_consultation.pdf

[8] http://ec.europa.eu/energy/electricity/florence/doc/florence_14/ergeg_compliance_r.pdf

Returning to the issue of how the ITC mechanism and GB charging arrangements interact, three scenarios are presented below to illustrate this.

In these scenarios there is a 400 MW flow into GB from France and a 400 MW flow out of GB to Northern Ireland. This creates a transit of 400MW and a net import and net export of zero.

Scenario 1: Transit flow has a negative impact, all applicable GB tariffs are positive

This scenario is the least likely to occur in GB, but it is the simplest to explain how charges interact.

The transit has a negative impact (causes costs on the GB network e.g. a north to south transit). In this situation GB would receive compensation from the ITC mechanism. The net import and net export are zero so GB would not contribute to the ITC mechanism. This would result in a net payment to GB to compensate for use of the GB transmission system. The proportion of the compensation would be decided within the ITC mechanism. Unless the ITC mechanism exactly reflected the GB charging arrangements, in unit cost, methodology, data and reference point, the amount recovered from ITC and the GB charge would not be the same. Therefore GB users will always be exposed to some form of national residual recovery (which may be positive or negative).

In isolation it seems logical that if National Grid was being compensated for transit through the ITC mechanism it would be inappropriate to also seek to recover this through GB charges. To avoid this, the volume of transit could be subtracted from charging arrangements of the appropriate interconnectors (the lost revenue being replaced by the ITC revenue). Looking at the data above the lost revenue would be the sum of the charges 30.21 £/kW[9] multiplied by the transit. In this example that would give a reduced charge of £12m (for a constant 400MW transit).

In terms of competition, if the ITC cost was collected from external systems on a cost reflective basis then the importer or exporter would see approximately the same cost as a GB generator or demand located at the same connection point (i.e. the external parties pay their host TSO, who then pays the ITC, which then pays GB). However, as on the GB system, the Regulation restricts explicit charges on imports and exports, therefore the charges would be socialised across all users of a particular class (generation, demand or both) on the external system. Furthermore, on the interconnector it is not possible to identify or target individual Users who transit (practically or legally), so any reduction in GB charges for the interconnector would be socialised across all Interconnector Users (including those who were competing to supply GB demand or exporting on to other systems).

So in this example where GB has a 400MW transit, if charges for deemed transit were removed, neither the import from France nor the export to Northern Ireland would have a GB charge, irrespective of whether their trades were internal for demand and generation. The cost for using the system would be provided by the ITC mechanism, and this cost would offset the overall charge to GB users, to the extent determined in the ITC mechanism. The compensation provided by the ITC would never match the GB charges due to the fundamental difference in the methodologies.

[9] (10.14+20.07), Generation at Auchencrosh and Demand at Sellindge for a north to south flow

Scenario 2: Transit flow has an implied beneficial impact, and one of the GB tariffs is negative

In this scenario GB would contribute for a benefit based only on avoided losses, and under the current national charging arrangements would pay one party and charge another for the flows[10] that caused the transit.

The difference in the GB charges should represent the difference in locational costs, however as one is generation and the other is demand, the apportionment of the residual means that this is not correct (the differential is only maintained between generation and generation or demand and demand, but not between demand and generation).

In this scenario, were National Grid paying an infrastructure benefit to the ITC mechanism it would seem inappropriate to also pay the benefit to Interconnector Parties directly through GB charges. Therefore, where the payment for the transit is negative (GB paying into ITC as negative compensation) it would seem clear that the metered amount for the negative tariff should be adjusted to remove a double benefit payment (to ITC and through a negative GB charge).

The current ITC mechanism does not cover payment for infrastructure benefit so this situation does not occur (although it does include a small benefit for losses). However, negative infrastructure payments may be included in future mechanisms.

The important note is that should GB participate in future mechanisms beyond 2010 where compensation for negative infrastructure benefit is included then this issue would need to be investigated further. National Grid does not consider that this should be investigated now as the possible structure of future mechanism could be significantly different.

Scenario 3: The transit flow has a benefit, all national charges are positive

In this case National Grid would not receive any infrastructure compensation from the ITC mechanism. Equally, it would have no payment as the net import / export is zero (only in this example). The ITC mechanism would impose a small cost on GB, associated with the benefit of reduced losses.

This example is similar to the situation as it occurs today for GB, apart from that there is a net import / export and so there is a payment to the mechanism to cover transit on other systems. The payment for importing and exporting far outweighs the losses compensation cost by a ratio of nearly 10:1.

In this example the sum of the GB charges represent the overall cost of the system, after taking account of the residual. So for GB, whilst the locational elements alone may produce a benefit, when the residual is added on the net cost of hosting the transit is calculated as a positive amount. For example, see charts 1- 3, the sum of the benefit in chart 1 is -14 (-7-7), in chart 2 it is still -14 (-5-9), and finally in chart 3 it becomes a cost of 6 (+0.4+5.6), and in this example the residual was 20. Removing the charges on the interconnector (in this example for the 400MW transit), all GB Users (demand and generation) would pick up the absolute cost of the changes as a shortfall in TNUoS.

[10] In practice National Grid does not charge for flows, but for capacity, however for the purpose of the example it helps to view it as a flow charge.

From a European perspective the argument would be that the costs are dealt with wholly in the ITC scheme and should not be charged separately through the GB regime. Additionally, GB consumers are benefiting from capping (the difference between the sum of the absolute GB charges and the uncapped payment to the ITC (noting issues around the scaling of the ITC charge by using regulated unit costs).

From a GB perspective, ITC compensation for infrastructure (which in this scenario is zero) is insufficient compared to that derived from the GB charging regime (sum of the two positive GB charges).

In terms of competition, if positive charges were removed, parties using the interconnector would appear have a competitive advantage if participating in the GB market (rather than transiting). In practice, the transit is relatively low compared to the import / export so the advantage would be limited. However as the parties transiting can not be identified the benefit is socialised across all Interconnector Users. It is important to note that external parties also have other charges: their host grid charges, if any, and explicit interconnector capacity fees, which also need to be considered.

Interaction of the benefit and the charge

The interpretation of the Regulation limits GB charging arrangements explicitly charging interconnectors the costs imposed on GB by the ITC mechanism (for import and export). So even though these costs are essentially a locational (cost of assets in external systems), they cannot be represented in the transport model. So the costs imposed by imports and exports are socialised through the residual.

National Grid believes that as the costs imposed by all Interconnector Users are socialised, it appears inconsistent to treat the benefits differently. In practice we are unable to establish which Users may, if any, be transiting. The regulation indicates that there should be no explicit ‘charge’ for transits, differentiating, be is positive or negative, between Interconnector Users and host users, could be regarded as explicit treatment and potentially contestable.

National Grid welcomes industry feedback on the scenarios presented above. In particular, whether respondents believe that changes are required to the GB charging arrangements for interconnectors as a result of GB participation in the ITC mechanism.

How a discount could be calculated

Appendix 1 describes in detail how the charging base could be determined to implement a discount on transits should this be decided as appropriate. In response to discussion at TCMF National Grid was asked to consider a methodology that a sought to apportion the benefit between interconnectors.

The adjustments become less accurate as additional interconnectors are established and the flows become more variable (in direction and volume). On the actual interconnections there is no contractual path notification and, more than likely, no contractual transit, so identification of benefit dispersal (which interconnector party should receive the benefit) would be impossible to establish, more than likely resulting in a flat discount applied to all interconnector users (through the interconnector owner).

National Grid is interested in views on the methodology described in Appendix 1, in particular, whether the complexity is beneficial or should a simpler and less cost reflective arrangement should be developed.

6 Incorporating the ITC payment as a locational signal

In a number of Industry meetings it has also been suggested that ITC charges should be directed to Interconnector parties as they cause them. Below we have described how this could be done and what some of the consequences would be. However, National Grid is mindful of the Regulation and would be concerned that this approach could be regarded as a specific charge on transits and rendered unlawful by article 4, 5 of the Regulation.

The simple scenarios above in section 5 do not have a net import or export. However, in practice the net import is far greater than the transit. Therefore the net charge for GB largely represents the cost that GB imports impose on other transmission systems.

This cost imposed, calculated by the ITC mechanism, and represents the annuitised cost of transmission assets used by GB users to transit over foreign transmission systems. Within the charging model this cost could be converted into a virtual asset. This asset could be placed at the interconnectors to provide a locational signal. For example, if there were large imports and the ITC determined that GB should compensate, say Belgium, by €2m for the use of it's grid to transits these flows. This €2m could be converted into a line at Sellindge which would provide a locational signal that reflected the costs incurred.

In practice it would be complicated and subjective to do this as it is not clear which import or export is causing the cost i.e. they are not directly related to volumes (as small volume over an expensive grid is equal in cost to a large volume on a less expensive grid). The issue of distributing costs is similar to the problem of distributing the benefit discussed in Appendix 1.

For example, if the total costs incurred were £7m, with £6.5 being deemed as a result of imports and exports at Sellindge, and £0.5m as a result of exports and imports at Auchencrosh. At Sellindge a line to the value of £6.5m would be modelled in the transport model. Recovering this amount from 2000MW of capacity would increase the generation tariff at that node by approximately £3.25/kW, to £4.15/kW (from £0.91/kW). This represents a significant increase, although is still less than the charge that interconnector parties would be exposed to if GB was not within the mechanism. There would also be a similar negative movement in demand tariffs.

Being mindful of the principles of the Regulation, National Grid considers that such an approach would be considered as a specific charge for declared transits even though it can be justified as a cost reflective locational charge. Therefore National Grid does not propose such an approach.

National Grid is interested in industry views on the application of a virtual asset approach and whether there are any views that such an approach could be justified with respect to the Regulation.

7 Summary

Considering the scenarios above National Grid invites views on whether participants believe that there is a reasonable case to justify removing the transit volume from GB charging arrangements or, alternatively, since the costs imposed on GB from net import and export are being socialised, that it would not be equitable to provide a specific discount.

National Grid is minded not to propose a locational cost on interconnectors, reflecting the ITC charges.

National Grid believes that given the subjective nature of applying a discount and the apparent inconsistency with the treatment of the ITC charge that no change should be made to the charging base for interconnectors.

National Grid does not believe that all interconnector charges should be removed as the ITC scheme does not compensate for all interconnector flows. Such an approach would result in a competitive advantage for interconnectors and thus be inconsistent with facilitating competition and could be seen as discriminating in favour of interconnector users in their use of the GB transmission. National Grid notes that if the regulation explicitly required all charges on interconnector parties to be removed then it would need to remove all of these charges, irrespective of the impact on the GB market.

8 Next steps

National Grid will consider the issues raised by respondents to this consultation and discuss the conclusions with Transmission Charging Methodologies Forum. Following this, National Grid will either formally confirm the intention not to make any methodology changes through an open letter or alternatively take forward a proposed change such as that highlighted in Appendix 1 of this consultation.

In the event that National Grid does take forward a change to the methodology this would be implemented as soon as reasonably practicable. This will not impact on published 2008/09 tariffs. If a discount through amending the charging base for interconnectors was proposed, subject to discussion with the Authority, implementation could be considered in the 2008/09 charging year. This would involve adjusting chargeable volumes only (hence the annual charge for affected parties, but not tariff). Any consequential impacts on revenue recovery would be dealt with in the following charging year.

National Grid welcomes any view on this implementation proposal.

9 Responses to this consultation

Comments and views are invited on all of the issues raised in this consultation document. To ensure that your comments and views are considered as part of National Grid's forthcoming consultation document, responses must be received by close of business on 12 November 2008. All responses will be treated as **non-confidential** and placed on the charging web site.

National Grid is continuing to work within Europe on a future ITC mechanism. National Grid is supporting principles that are consistent with the NGET licence,

promoting competition, cost reflectivity and non discrimination; along with promoting efficient investments and support security of supply.

National Grid welcomes any wider Industry comments on the role and functioning of a future ITC mechanism. Any views provided will be used to inform National Grid's position in discussion on future ITC mechanisms within ETSO.

If you wish to provide comments on this consultation document, responses are welcome via email to: patrick.hynes@uk.ngrid.com

Alternatively, Users can send their comments in writing, addressed to:

Patrick Hynes
Electricity Charging & Access Development
National Grid Electricity Transmission plc
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If you have further queries, please do not hesitate to contact Patrick on 01926 656319.

Appendix 1 Options for amending the charging base

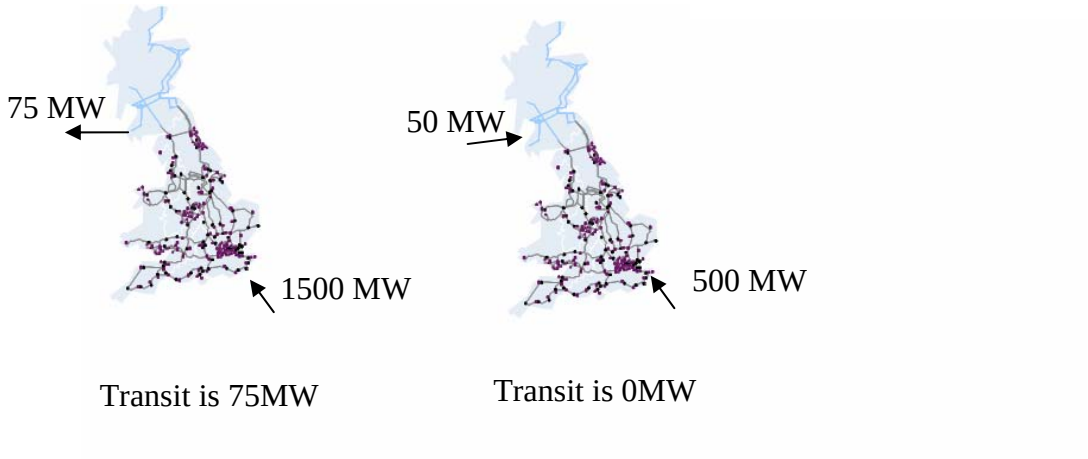
This appendix describes how National Grid could facilitate the proposal for reducing the chargeable volumes to take account of transit volume in GB charging arrangements. For the avoidance of doubt, National Grid is minded not to propose this change.

It is important to note that the situation of today, with two interconnectors is relatively simple. Once when new interconnectors are commissioned the situation becomes much more complicated and subjective. The need to accommodate future interconnectors leads to the methodology for apportioning benefits to be relatively complex.

Defining transit
The transit at any time would be defined as the lower of the net export and net import over the period in question. This would be calculated on an hourly basis using MWh:

- **Transit = Minimum { ΣPexi, ΣPimj }; with:**
  Pexi = P of X node with positive active power i
  Pimj = -P of X node with negative active power j

For example



When would the transits be determined?
In terms of the GB methodology generation charges are annual, based on TEC (or three generation peaks separated by 10 days in negative generation zones); and demand charges are based on the average demand taken over the triad (interconnectors are HH metered). This is very different to the arrangements for the ITC where transits are 'costed' on the combination of 72 snapshots and hourly metered flows.

We have considered three options to determine transit for GB charging purposes:

i. Calculate at triad,
ii. Calculate on a number of snapshots,
iii. Calculate on an hourly basis.

i) Calculating on triad would involve metering the export (demand) and the import (generation) at triad. The transit on each triad period would be the lower of the sum (if more than 2 interconnectors) of the net import or net export. This would then be summed taking account of direction and divided by three (the number of triad legs).

This approach is closely related to the GB changing arrangements which are largely capacity rather than usage based. Under this proposal there could be a transit most of the year but no allowance made unless transit occurs on peak. Investment in the GB system is generally peak driven so peak based charging would be most cost reflective.

ii) Within the ITC mechanism 72 representative snapshots are used to calculate the effect of transits on the transmission system. Adoption of this process to determine transits would not be consistent with peak-based arrangements, but it would align more closely with the ITC mechanism. The calculation would be similar to that above for triad, but averaged over a greater number of scenarios. The weighting factors for the 72 snapshots would be those used in the ITC mechanism. This would align the discount to the ITC mechanism.

iii) Hourly import and exports are recorded and submitted to the ITC data administrator. It would be possible to use these figures to calculate the transit for the purposes of GB charging. Although this would be more accurate in the case of losses, for infrastructure it would be less accurate, however it would be more cost reflective in terms of ITC net payment. In order to meet the charging timetable, the actual period used only be 11 months, April to February (8016 periods). Given the need to manage this volume of data for ITC data submission, there is no real increase in workload between using 72 snapshots and the 8000 hour periods.

In each period used the transit would be calculated and an average over the year would be used for transit, should that be over 3, 72 or 8016 periods. In each of these periods and across the periods the ‘sign’ would be considered as this has an important impact on the compensation.

What adjustments should be made to the GB charging arrangements?
The objective is to avoid double counting with the ITC mechanism, whilst charging the imports and exports for national use avoids discrimination with other users on the GB system. The double counting could be paying a benefit twice or charging twice.

In terms of liability, the historic average level of transit would be in the region if 150 MW south to north. Based on the current transmission system and using 2007/08 system tariffs, this would represent a saving of just over £1.1m for Interconnector Users. This is based on a charge of £6.36/kW in the South of Scotland demand zone and £0.91/kW in the South East generation zone. This saving reduces to £140k if the Moyle interconnector triad manages.

In adjusting the deemed metered volume for charging purposes the charge would be capped at zero. This situation would occur if the demand, which has metered volume calculated at triad, has a volume adjustment determined by transit throughout the year (on an hourly basis), which is bigger than the triad average. This situation is likely to occur.

Where there are more than two interconnectors the adjustment would be pro-rata based on contribution to ‘transit’ in each period. Also, where the generation charge is negative, the adjustment would be done to the average chargeable generation figure

(three peaks, separated by 10 days) rather than TEC. In this case it would reduce the payment to the interconnector.

Summary

A suggested process for adjusting deemed metered volumes on interconnectors to take account of transit is:

- Determine 'transit' on the basis of hourly imports and exports, averaged over the year, taking account of direction.
- For import in the direction of the transit (treated as generation), for charge calculation reduce TEC by transit.
- For export in the direction of the transit, (treated as demand), for charge calculation reduce the chargeable demand (triad demand) by the 'transit'.
- The adjustment could **not** go negative for charging purposes, i.e. turn an importing interconnector in to an exporting interconnector or vice versa.
- Import and export between multiple interconnectors would be apportioned based on the contribution to the transit over all the periods.

Example, for a simple two interconnector system:

For an average transit of 200MW from Sellindge to Moyle, the charge for Sellindge would be (TEC -200)*zonal tariff, and the charge for Moyle would be (triad demand - transit). In this example, any TEC charge for Moyle or demand charge for Sellindge would not be affected as they are in the opposite direction to the transit. In both cases, the reduced chargeable volume would be collared at zero.

The example below shows how the proposed methodology would work on a slightly more complex system with more than two interconnectors:

Basic system data:

I/C	Status	TEC	Gen tariff £/MWh	Demand tariff £/MWh	Gen charge £k	Demand charge £k
A	Mostly imports	2000	2000	20000	4000	0
B	Mostly exports	100	10000	5000	1000	2000
C	Exports and imports about equal	1000	5000	15000	5000	0

Flow data:

	Interconnector					
	A	B	C	Sum Import	Sum Export	Transit
*Triad leg	2000	-400	300	2300	-400	400
	2000	-40	-300	2000	-340	340
	1500	50	100	1650	0	0
	1800	-400	-100	1800	-500	500
	1200	-400	50	1250	-400	400
	2000	-20	-50	2000	-70	70
	-500	-400	30	30	-900	30
	-500	40	-30	40	-530	40

Results:

I/C	TEC discount	Demand discount MW	Gen discount £k	Final Gen charge £k	Gen charge reduction	Demand discount £k	Final demand charge £k	Demand charge reduction
A	205	-7	410	3590	10.26%	0	0	0%
B	5	-159	50	950	5.00%	796	1204	40%
C	12	-57	61	4939	1.23%	0	0	0%

In practice this calculation would be carried out across 8016 periods.

National Grid would be interested in Users views on the complexity and proportionality of attributing the benefit through the process described above.

End of Appendix 1