

Transmission Charging

This paper addresses those issues under consultation in GB ECM-11 For the charging arrangements for generator local assets; GB ECM-13 For the treatment of the residual generation tariff in the calculation of TNUoS tariffs; GB ECM-14 Consequential impact of CUSC Amendment Proposals 161, 162, 163 and 164; GB ECM-15 Long term fixed TNUoS tariffs; and GB ECM-17 Transmission charging – a new approach. It is also mindful of the recent further consultation GB ECM-08 Modification proposal to the TNUoS charging methodology to introduce charging arrangements associated with offshore transmission networks; and the proposed future consultation GB ECM-16 Long term entry capacity auctions.

Summary

Following publication of the Energy White Paper 2007 and the Transmission Access Review, the GB electricity industry has committed to reassess the commercial arrangements governing generation users' access to and use of the GB transmission system.

Underpinning this work are the substantial security of supply challenges resulting from the scheduled closure by 2020 of up to one third of the existing UK generating capacity, and the legally binding targets to reduce greenhouse gas emissions set out in the Climate Change Act 2008. To meet this future energy challenge, significant investment in new generation capacity (both renewable and low carbon conventional technologies) is required. It is widely accepted that stability and certainty in the regulatory and policy frameworks are essential to achieving sufficient, timely investment.

Scottish and Southern Energy (SSE) strongly believes that the current arrangements for charging for access to the GB transmission network do not encourage investment in new generating capacity. We have argued for a number of years, and presented detailed evidence to support our arguments, that the incremental cost related pricing model used by National Grid in setting Transmission Network Use of System (TNUoS) tariffs is not cost-reflective. Further, the resultant TNUoS tariffs are extreme, volatile and unpredictable. In this charging environment, it is nearly impossible for a potential investor to gain the medium to longer term confidence over charges that is necessary for it to commit to the substantial investments required to achieve new GB generation capacity.

In our view, there are three sets of interlinked issues that need to be solved if the charging arrangements for generation users' access to and use of the GB transmission system are going to be fit for purpose. These are to put in place:

- An approach to charging for connection to the network that enables informed network investment decisions and, hence, minimises the exposure of other users to inefficient or stranded assets;
- A regime for charging for use of system that supports ongoing investment and operational decisions through the right balance between cost reflectivity, stability and predictability; and
- Charges for use of system that are consistent with the objective of maximising utilisation of the existing (and future) transmission network.

In summary, this means clear, cost-reflective charges for new connections to the network; stable, non-discriminatory charges for ongoing use of the network; and charging for usage rather than to reserve capacity.

To achieve this, we support a charging regime with a framework as follows:

- **Generator only local assets** For those transmission assets used solely by generation user(s), a user-specific charge that reflects the upfront capital cost and ongoing maintenance cost of those local assets.
- **Wider shared transmission assets** For the parts of the transmission system used by both generation and demand users, a uniform commodity charge that is levied on generation users based on their measured export onto the transmission system.

All generation users connected to the GB transmission system would be liable for both the local and wider charges. Embedded generation users with a Bilateral Embedded Generation Agreement (BEGA) would be liable for the wider charge only.

Implementing this regime would result in a change in generation users' charges. All generation users would be affected; in general, two main factors would determine the scale of the change experienced by individual users. Firstly, the combination of a user-specific local asset charge and a uniform commodity charge would result in a change to the locational signal to reflect the distance from the existing network rather than the distance from demand. In addition, negative charges would be removed. Secondly, replacing the capacity reservation charge with a commodity charge would result in a reduction of charges for low load factor generators and an increase in charges for high load factor users.

Based on information in the public domain, we estimate that around 60% of generation users would experience a reduction in charges, including all renewable generators. Of those generation users that would experience an increase, we estimate that less than 10 users would experience an increase of more than £5 million per annum (of which, the majority are currently liable for negative charges).

Going forward, we are mindful of the transmission tariffication guidelines published by the European Regulators Group for Electricity and Gas (ERGEG). These guidelines advocate harmonisation of use of system charges for generator across Europe and, to achieve this, we would support a gradual reduction in the wider shared asset charge in GB towards zero.

The definition of 'local' and 'wider' transmission assets

SSE supports a framework for charging generation users that has separate elements for local and wider transmission assets.

The rationale for this is simple. Local, generator only, transmission assets provide the physical link between the generator and the transmission system; without the generator these assets would be redundant. Given that no other user benefits from the provision of local generator assets there is a strong case that the connected user should be liable for the absolute cost of those assets. In contrast, the wider transmission system has multiple users (both generation and demand users) resulting in power flows variable in both time and magnitude that are difficult to 'tag' to any individual user. The security and quality of supply standard for the wider shared transmission system is significantly more onerous than for local generator assets and, hence, in most instances the dependency of individual users on individual assets is tenuous. Given this, there is a strong case for charging users for actual use of the wider network.

It is important, for charging purposes, to have a clear, simple, unambiguous distinction between local and wider transmission assets, as follows:

Generator only local assets comprise the electrical connection between one or more generating units and the wider transmission system.

The **wider shared transmission system** comprises the Main Interconnected Transmission System (MITS) (as defined in the GB Security and Quality of Supply Standard) and those parts of the GB transmission system that are required for the supply of power at Grid Supply Points (GSPs), i.e. any apparatus which if removed would reduce the supply capacity a GSP.

Consistent with the rationale for local and wider charging set out above, this definition clearly distinguishes between those local assets used only by generation user(s) and those wider shared assets which are used by both generation and demand users.

This approach is different from that proposed by National Grid in GB ECM-11 (and subsequent modification proposals) which seeks to distinguish local and wider transmission assets through the definition of a MITS node as follows:

Main Interconnected Transmission System (MITS) nodes are defined as:

- A GSP connection with 2 or more transmission circuits connecting at the site or;
- More than 4 transmission circuits connecting at the site.

Where a GSP is defined as a point of supply from the GB transmission system to network operators or non-embedded customers excluding generator or interconnector load alone. For the avoidance of doubt, generator or interconnector load would be subject to the circuit component of its local charge. A transmission circuit is part of the GB transmission system between two or more circuit-breakers which includes transformers, cables and overhead lines but excludes busbars and generation circuits.

Under GB ECM-11, generators directly connected to a MITS node would not be liable for a circuit based local charge. Generators not connected to a MITS node would be liable for a circuit based local charge.

National Grid explains that the definition of a MITS node “was aimed at identifying local assets that exist to connect generation only”. The definition proposed achieves this for the 275kV and 400kV supergrid and those 132kV elements of the system operated in parallel with the supergrid. However, the definition takes no account of the radial parts of the GB transmission system that are shared by both generators and demand; hence, overall the definition fails to achieve National Grid’s stated aim.

This means that, if National Grid’s proposed definition of a MITS node was implemented, generator users would be liable for a local charge, ostensibly for generator only local assets, that includes for assets necessary for demand security. An example of this would be Farr windfarm which, as proposed, would be charged a local charge for circuits that also secure demand at Boat of Garten GSP. Hence, while we support the intention behind National Grid’s proposal, we do not agree that the proposed definition of a MITS node is consistent with this intention.

Charges for generator only local assets

As described above, we believe that there is a strong case that generation users should be liable for the cost of their generator only local assets. National Grid has proposed such change to the charging methodology in modification GB ECM-11, and we support the principle of a cost-reflective local charge with respect to both facilitating economic and efficient connection designs (as set out in GB ECM-11) and wider reform of the charging framework (discussed here). Importantly, this approach would ensure that the wider customer base is not exposed to inefficient or stranded generator only transmission assets.

That said, and in common with the majority of respondents to the August 2008 consultation, we have real concerns with the modification to the TNUoS charging methodology that National Grid has proposed to introduce a local asset charge (as set out in GB ECM-11 Conclusions Report). It is clear from the worked example presented in the August 2008 consultation that the local asset charge proposed under GB ECM-11 is demonstrably not cost-reflective and, as a consequence, we do not support the modification proposal.

Over the past two and a half years, the industry has examined the issue of charges for generator only local assets in significant detail. It is widely agreed that such a charging approach is necessary, and that the charge should be cost-reflective without reintroducing the perceived disadvantages of a deep connection charge (for example, other users’ actions, disaggregation of shared assets and the allocation of ‘strategic’ investment). The modification proposal GB ECM-11 goes some way to achieving this goal, but the real and important outstanding industry concerns need to be met. In this regard, it is disappointing that National Grid has opted not to make any changes to its proposals in light of responses to the August 2008 consultation.

We believe that there is scope to amend National Grid's GB ECM-11 proposal to address industry concerns, and we would support the following changes:

- Use of 132kV and 275kV overhead line and cable expansion factors that are specific to the affected Transmission Owner. In addition, given the potential range of circuit costs and the small database, application of a 'sense check' where if the actual expansion factor varies from the generic expansion factor by more than, say, 20% a circuit specific expansion factor is used.
- Circuit specific local security factors that accommodate partial redundancy in the connection design.
- As described above, a change to the definition of a MITS node that takes account of the radial parts of the GB transmission system that are shared by both generation and demand users.
- A review of the connection-infrastructure boundary, which currently states "Where customer choice influences the application of standard rules to the connection boundary, affected assets will be classed as connection assets", to ensure that this is not resulting in the same assets being categorised as connection for one user and infrastructure for another.

The changes proposed above would improve this modification proposal with respect to National Grid's relevant objectives of facilitating competition, cost-reflectivity and taking account of business developments. It would also remove the potential for discrimination between onshore and offshore generation users. Circuit specific local expansion factors and local security factors (as we suggest above) have been proposed by National Grid in the October 2008 further consultation GB ECM-08 Modification proposal to the TNUoS charging methodology to introduce charging arrangements associated with offshore transmission networks; hence, the changes proposed above would align onshore and offshore charging arrangements.

Charges for wider shared transmission assets

Capacity or commodity?

Historically, it has been argued that investment in the transmission system has been incurred on a capacity basis in order to meet winter peak demand. Taking into account the predominance of high load factor, reliable generation, this has resulted in charges for use of the transmission system being levied on a capacity basis, i.e. a £/kW capacity reservation tariff.

It is fair to say that, having been through a long period of relative stability in generating conditions, the GB electricity generation market is now going through a period of unprecedented change. This change is manifest regardless of plant age and condition, technology, fuel or location. Carbon-based generators are now subject to stringent environmental and emissions controls. Renewable technologies are encouraged and incentivised as a result of national and European policies and, increasingly, legislation. The future for nuclear generation in GB remains uncertain given, in particular,

likely obstacles in the planning process. More generally, commodity and fuel prices are volatile, and supply businesses are seeking change in response to the demands of their customers.

These, and other, factors have contributed (and continue to contribute) to significant changes in the operation of generation users and, hence, their use of the GB transmission system. While we agree that investment in generator only local assets is scaled to meet peak export capability (and, through a local asset tariff, should be charged for on this basis), we believe that it is becoming increasingly untrue that investment in the wider shared transmission system is – or, indeed, should be – on the basis of meeting generators' peak export capabilities. This has been recognised by the transmission businesses and is being progressed through a fundamental review of the system planning standard.

Investment in the GB transmission system is increasingly being driven by the changing requirements of generation users. Overall, generation capacity is forecast to increase by around 40% by 2015. The volume of intermittent and low load factor generation has increased, and this rise is expected to continue. Against this background, demand forecasts are also changing in response to slowing consumer demand and increasing distributed generation; overall growth of less than 5% is expected by 2015.

Given, in particular, the changing operation of generation users and necessity to grow the plant margin (as the volume of intermittent generation increases), we believe that it is no longer appropriate or relevant to charge generation users for use of the wider shared transmission network on the basis of capacity reservation. Generation users will not all be able to respond to conditions of peak demand, and investment in the transmission system will no longer expect this. Hence, we believe that the prevailing (and future) conditions are more suited to a charge for generators which is based on utilisation.

Uniform or locational?

For the reasons described below, we believe that the utilisation charge should be levied as a uniform charge across GB determined from the total annual revenue requirement (£) divided by the total annual generation export (MWh). Each generator user would be liable for the utilisation charge (£/MWh) multiplied by its total metered export over the year (MWh).

Such a charge would be transparent, predictable and stable; hence, facilitating effective competition in generation, in particular through the promotion of a stable climate for investment. It would recognise the developments in the GB electricity generation market and the use of the transmission system, and the consequential changes to the way the transmission licensees plan and run their businesses (as discussed above).

We recognise that the key concern around implementing a GB wide utilisation tariff will be cost reflectivity and, in particular, the impact on cost reflectivity of removing the locationally varying element of the tariff. It is true that a uniform tariff would represent an average charge and, hence, would not exactly reflect an individual user's impact on the costs of the transmission network. However, there is strong evidence that the current locationally varying element of the tariff is no more cost-reflective than

a uniform tariff approach. Consequently, we believe that replacing a charge that is not cost-reflective with an average charge is a relative improvement, and the case is compelling when the many other benefits of a uniform tariff, such as year-on-year stability, are also taken into account.

Considering the specific issue of the cost-reflectivity of the current TNUoS tariff, the correlation between TNUoS (specifically, the locational element) and transmission investment has been examined in detail as part of the Transmission Access Review. The conclusion reached was that TNUoS is not a good proxy for network investment. To illustrate this, National Grid presented the example of reinforcements to the shared transmission system necessary to connect new generation near London. The prevailing TNUoS tariff is negative, meaning once connected the new user would receive an annual payment, yet to provide the connection requires investment of £70/kW.

In response to this, it is argued that, although investment is required to connect the near London generator, the overall cost of connecting this generator is negative because an equivalent sized generator further from London is no longer required, i.e. demand requirements can be satisfied by the new near demand generator, removing the need for the costly remote transmission system. As recognised within the charging statement, this argument is somewhat narrow in scope, particularly as it takes no account of the long life of existing generation and transmission assets – which don't just disappear on the connection of a new, substitute, generator.

While this argument might be credible in times of low plant margin, the validity of the argument is stretched as the volume of intermittent and low load factor generation users grows. We do not believe it is cost-reflective to attribute a negative charge to, for example, an offshore windfarm located near London that requires many millions of pounds of transmission investment to connect and yet makes a negligible contribution to security of supply.

A charge that accurately reflects the costs of an individual generator's connection can be easily put in place through a local asset charge. A cost-reflective allocation of the costs of the wider shared transmission network is best achieved, in our opinion, through a uniform commodity charge. Alternative approaches to allocating the costs will not be cost-reflective when considered over the lifetime of generation and transmission assets, not least as power flows become more variable in response to the changing generation mix and a growing plant margin. An allocation of costs that is right on average is preferable to an allocation that is demonstrably wrong for everyone.

Impact of a uniform commodity charge

The total revenue recovered from generation users in 2008-09 is around £365 million. If a generator only local asset charge was introduced, this would recover around £35 million. We propose that the remaining £330 million would be recovered through a uniform commodity charge for use of the wider shared transmission assets.

Based on information in the public domain, we estimate that the combined impact of the local asset and wider commodity charges would be a reduction in charges for around 60% of generation users, including all renewable generators. Of those generation users that would experience an increase, we

estimate that less than 10 users would experience an increase of more than £5 million per annum (of which, the majority are currently liable for negative charges).

The main impact of the combined local asset and wider commodity charges would be the introduction of stability and predictability in transmission charging. This, we believe, would be welcomed by an industry that is required to make significant investment and operational decisions in coming years.

Consider the impact on, for example, operational decisions at an aging thermal plant that has opted-out of the Large Combustion Plant Directive. This user has to decide how to profile the use of its remaining operational hours between now and 2015. The current charging regime encourages early use of the hours as the charge is based on capacity not use, and there is uncertainty about future charges. Local asset and wider commodity charges would provide certainty over costs and not penalise the generation user for its low load factor.

Liability for the local and wider charge

All generation users connected to the GB transmission system would be liable for the local and wider charges. Embedded generators with a BEGA would be liable for the wider charge only.

The generator only local asset charge would be determined for each generation user and comprise a circuit and substation element. The wider shared asset charge would be determined annually from the known revenue requirement and a forecast total generation export. Generation users would be charged monthly for the previous month's metered export.

Conclusions

In conclusion, SSE strongly believes that the current arrangements for charging for access to the GB transmission system do not encourage investment in new generating capacity. Furthermore, the GB electricity market is going through a period of unprecedented change and this is, in turn, driving unprecedented change in the way that the GB transmission system is planned and operated. We believe that the charging arrangements need to be reformed to reflect both the necessity for new investment and the evolution in the way the system is used.

We support a charging regime that comprises clear, cost-reflective charges for new connections to the network; stable, non-discriminatory charges for ongoing use of the network; and charging for usage rather than to reserve capacity.

Our views on the charging modification proposals currently under consultation are summarised below. While we comment on each proposal in isolation, we note that the impact of these proposals is cumulative and interactive. Hence, we support a wider 'joined-up' reform of the charging methodology (as described above) rather than a series of 'piecemeal' modifications.

GB ECM-11

For the charging arrangements for generator local assets

We support the principle of a cost-reflective local charge for generation users with respect to both facilitating economic and efficient connection designs (as set out in GB ECM-11) and wider reform of the charging framework.

However, we have real concerns with the modification to the TNUoS charging methodology set out in GB ECM-11 Conclusions Report and, as a consequence, do not support this amendment. Our key concern, as we demonstrated in our response to the August 2008 consultation, is that the local asset charge proposed under GB ECM-11 would not be cost-reflective.

To improve the cost-reflectivity of National Grid's GB ECM-11 proposal, we believe the following changes are required:

- Use of 132kV and 275kV overhead line and cable expansion factors that are specific to the affected Transmission Owner. In addition, given the potential range of circuit costs and the small database, application of a 'sense check' where if the actual expansion factor varies from the generic expansion factor by more than, say, 20% a circuit specific expansion factor is used.
- Circuit specific local security factors that accommodate partial redundancy in the connection design.
- As described above, a change to the definition of a MITS node that takes account of the radial parts of the GB transmission system that are shared by both generation and demand users.
- A review of the connection-infrastructure boundary which currently states "Where customer choice influences the application of standard rules to the connection boundary, affected assets will be classed as connection assets", and results in the same assets being categorised as connection for one user and infrastructure for another.

The changes proposed above would improve this modification proposal with respect to National Grid's relevant objectives of facilitating competition, cost-reflectivity and taking account of business developments.

GB ECM-13

For the treatment of the residual generation tariff in the calculation of TNUoS tariffs

We support the principle of charging generation users for use of the GB transmission system on the basis of utilisation rather than capacity. We believe that an utilisation charge would most appropriately reflect the use of the system by an increasingly diverse mix of generators, and the consequential impact on the way the transmission system is being planned and operated.

We note the proposals to modify the way in which the residual element of the TNUoS generation tariff is calculated and levied, which includes options to commoditise the residual charge based on total annual metered generation or annual metered generation during the daily peak. While we support the principle of a commodity charge, and hence believe that the options proposed under GB ECM-13 are worthy of further consideration, we believe that commoditising only a part of the charge (the residual) would be insufficient.

It is not proposed under GB ECM-13 to revise the methodology for determining the locational element of the TNUoS tariff. The transport model used to calculate the locational element is intended to reflect the costs of capital investment in, and the maintenance and operation of, a transmission system that provides bulk transport of power. It is, crudely, based on calculating the investment cost associated with adding a megawatt of generation at a specific location. This approach was adopted as a response to the view that investment in the transmission system was incurred on a capacity basis in order to meet winter peak demand; hence, it was appropriate to determine the charge on a capacity basis.

There is growing evidence, with which we concur, that a key factor in decisions about investment in the transmission system is to provide capacity that meets the expected utilisation. This evolution in the system planning process is in response to the changes in the generation mix and how those generation users operate their power stations. It is certainly not the case that a megawatt of wider shared transmission capacity is built for each megawatt of generation that connects.

The modifications proposed to the way in which the residual element of the TNUoS generation tariff is calculated recognise this evolution in the system planning process. If these modifications were implemented it would result in different underlying assumptions to the locational and residual element of the TNUoS tariff. This position is, in our view, not credible and, hence, we cannot support a change to the residual tariff without an equal and corresponding change to the locational tariff. Specifically, we believe that there should be wider shared transmission charge (recovering the sum of the current locational and residual elements) that is levied as a uniform charge across GB.

GB ECM-14

Consequential impact of CUSC Amendment Proposals 161, 162, 163 and 164

SSE supports the high level principles for charging set out by Ofgem: cost-reflectivity, simplicity, transparency, predictability and the facilitation of competition. Hence, we support a charging

methodology that charges generation users the cost of providing access to the network (through a generator only local asset charge) and a charge based on their utilisation of the network (through a wider shared asset charge). This charging framework would apply to all generation users connected to the transmission network and licensable users embedded within the distribution network, regardless of the access product used.

We note the proposals under GB ECM-14 to levy only a local asset charge and a residual charge on generation users with a short term access product (SO release, overrun or sharing). These users would not be liable for the current locational element of the TNUoS charge. Notwithstanding our view that fundamental reform of the charging methodology is required, we have serious concerns with the proposed modifications set out in GB ECM-14 and believe that, if implemented, these modifications could result in an internally contradictory charging arrangements that might have perverse consequences.

Our main concern relates to the allocation of costs. We agree that all generation users should be liable for a charge that reflects the costs of providing the local assets necessary for their connection to the GB transmission system. We also agree that all generation users should be liable for a charge for the wider shared transmission system on the basis of their utilisation of the system. Where we become concerned is with the principle that only some generation users would be liable for a further charge that is intended to reflect the investment cost associated with adding a megawatt of generation at a specific location. We do not agree that such a charge is consistent with the development of the transmission business or is consistent with the facilitation of competition.

Underlying our concern is the question of how this generation user with short term access is treated by transmission system planners. Do the transmission system planners assume that the user is not there? If so, does this mean no transmission capacity is provided for and there is no expectation of generation export? What does this mean for security of supply, and future investment signals to generation and networks? What about if an existing generation user decides to transfer from long term to short term access – what happens to the existing transmission investment and the locational signal? If the locational signal is negative, why would a generation user forfeit this payment and would this result in over-investment in the regional transmission system?

In summary, we believe that further consideration is required on this issue and would again urge a holistic view in the development of the TNUoS charging methodology.

GB ECM-15

Long term fixed TNUoS tariffs

It is the instability, uncertainty and unpredictability of the current TNUoS charging methodology that results in generator users seeking the option to fix their tariffs. Equally, it is the instability, uncertainty and unpredictability of the current TNUoS charging methodology that results in the remaining users on

variable tariffs being unwilling to be exposed to the financial consequences arising from differences between fixed and variable tariffs.

The option of long term fixed TNUoS tariffs based on the current methodology is always going to be difficult and, in our opinion, it is nigh impossible to achieve an acceptable allocation of the risks. Hence, we believe that the issue of instability, uncertainty and unpredictability should be addressed at source through a change to the charging methodology that provides stable, certain and predictable charges.

GB ECM-17

Transmission charging – a new approach

We support the proposal put forward by the Scottish Government, within the framework of a generator only local asset charge and wider shared asset charge (as described above).