

CONCLUSIONS REPORT

GB ECM-17

Transmission Charging – A New Approach

A proposal from:

Scottish Power

Scottish & Southern Energy

Scottish Renewables Forum

Scottish Government

15 September 2009

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1 Executive Summary

This report sets out the responses received and National Grid's conclusions to the Scottish Government's proposals for modifying the Transmission Network Use of System (TNUoS) charging methodology to create a uniform TNUoS tariff for the whole GB system.

The locational element to the TNUoS tariff calculation is designed to encourage efficient investment decisions by requiring generators to take account of the costs that they impose upon the system when locating their plant. The main rationale given by the proposers for moving to a uniform TNUoS tariff was that this locational element inhibited renewable generation projects in Scotland.

The proposal made a number of broad statements on the fundamental principles of the current TNUoS charging methodology, which respondents to both stages of the consultation were requested to rigorously justify. Whilst significant quantitative analysis was provided which contradicted these claims, the analysis presented in support of the proposal was largely based on qualitative assessment, causing National Grid difficulty in unequivocally demonstrating that the proposal was an improvement over the existing methodology.

There were a number of points where National Grid agreed with the respondents that there were issues with the existing methodology which should be addressed, specifically that no account is taken of the lower investment requirement of wind generation and that volatility can be introduced by rezoning. National Grid does not believe that these concerns reflect a fundamental flaw in the TNUoS calculation that merits a complete rejection of the existing methodology, however National Grid commits to discuss these issues with the industry through the Transmission Charging Methodologies Forum.

One of the overarching themes of the proposal was that moving to a uniform tariff would assist governments in achieving their various environmental targets on renewable generation and CO₂ reduction. National Grid supports these aims, but does not agree that a cost reflective transmission charging methodology is inconsistent with their achievement. The purpose of the TNUoS methodology is to signal costs in a non-discriminatory and transparent way, and this should ensure that the targets are met at the lowest cost to the consumer.

National Grid is aware that there is a review underway that may result in changes to the governance of the charging methodology, however under the current licence National Grid is required to develop changes that it believes better meet the relevant charging objectives. In considering all the responses, National Grid has come to the conclusion that moving to a uniform TNUoS charge for Great Britain would not better facilitate any of the relevant objectives, and therefore will not be progressed further.

This report has been published on the National Grid charging website:

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

2 Introduction

As the transmission licensee, authorised to co-ordinate and direct the flow of electricity onto and over the transmission system within Great Britain, National Grid has duties under the Electricity Act to develop and maintain an efficient, co-ordinated and economical transmission system and to facilitate competition in generation and supply.

Along with these high level duties, National Grid is obliged under its transmission licence:

- (i) to keep the Use of System Charging and Connection Charging Methodologies at all times under review
- (ii) 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 generation and supply;
 - b) to result in charges which reflect, as far as reasonably practicable, the costs incurred by transmission licensees in their transmission businesses;
 - c) in so far as is consistent with a) and b) above, as far as reasonably practicable, they properly take account of the developments in transmission licensees' transmission businesses.

In addition to the relevant objectives above, the transmission licence also prohibits National Grid from discriminating against any User or class of Users unless such different treatment reasonably reflects differences in the costs of providing a service.

A pre-consultation report for ECM 17 "Transmission Charging – A New Approach" was published in January 2009¹. As a result of the responses received to this pre-consultation, a formal consultation was issued in May 2009 requesting further information and views from the industry. This report sets out the responses received to that consultation, along with National Grid's views and recommendation.

¹ <http://www.nationalgrid.com/NR/rdonlyres/E15731EC-7FF3-4D1A-ACED-63F0D91FDA08/32113/CombinedResponses1.pdf>

3 Terms of the Original Proposed Modification

3.1 Explanation of the Issue

An alternative approach to transmission charging has been received from the Scottish Government in conjunction with Scottish Power, Scottish and Southern and the Scottish Renewables Forum.

The Scottish Government considers that the current transmission charging methodology has two particular consequences which are adversely affecting the entry of new generation to the GB electricity market. Firstly, the resultant tariffs are unstable, unpredictable and highly volatile, creating an uncertain environment for investment. Secondly, the methodology was intended for 'old' generation technologies and for a different market and trading environment and, as a result, discriminates against renewable generation.

The Scottish Government noted that the locational element of transmission charges incurred by generators represents only around 15 percent of total generator charges, although this percentage is the net figure and masks considerable regional differences with generators in the north paying £190M and generators in the South receiving a payment of £140M. The Scottish Government presented the view that this creates a substantial and unjustifiable imbalance between overall costs incurred by generators in the north and their counterparts in the south.

3.2 Description of Proposed Modification

The overall principle of the proposal is that transmission charges for generators that use the Great Britain transmission system are levied at a uniform rate for each unit of energy that enters the system, irrespective of its location. It was proposed that the basis of charging generators should be changed from paying for the maximum entry capacity (MW) to paying for the usage of the system, i.e. moving from a 'reservation' capacity charge to a 'usage' commodity charge derived annually from the revenue requirement and the forecast generation output (MWh). The Scottish Government considered that both of these parameters are stable year-on-year, and that Users and National Grid would be held neutral to any under- or over-recovery through a revenue restriction correction factor, such as that already in the transmission licence. It was noted that a commoditised charge for 2008/9 would be in the order of around £1.00/MWh.

3.3 Summary of the Pre-Consultation

In the interests of brevity, the views and analysis contained within the responses to the pre-consultation are summarised below, however the full consultation and responses are available on the National Grid charging website². 18 industry responses were received to the pre-consultation, with 11 parties supporting the proposal on the basis that:

- TNUoS charges are, year-on-year, high and volatile in Scotland and inhibit the deployment of both new renewable and thermal generation at a time when new investment is required to meet significant renewable electricity obligations and the delivery of reliable supplies of electricity;
- the current TNUoS model, by imposing high and volatile charges on generators located in the peripheral regions of both Europe and Great Britain,

² <http://www.nationalgrid.com/uk/Electricity/Charges/modifications/uscmc/>

amounts to discrimination as per the 2009/28/EC directive on promotion of renewable energy;³

- the current TNUoS model was designed for a centralised generation model and does not promote investment in renewable electricity projects which are least able to respond to 'locational pricing signals';
- generators in the north pay £190 million for TNUoS whilst generators in the South receive a payment of £140 million. So despite the locational element of TNUoS only accounting for 15% of total generator charges the large discrepancy is unjustifiable;
- a flat charging model for use of system rather than for reserving access to the system is the fairest for National Grid to recover the cost of operating transmission networks;
- a flat charge which would be derived annually would be cost neutral to consumers and National Grid and benefits from being simple, predictable, non-discriminatory, cost reflective, supportive of government objectives and will help develop a European energy market;
- proposed changes are consistent with Government objectives, as described in the Transmission Access Review, to guarantee access to the transmission network to all new generators in a timeframe consistent with their development using access products and associated charging methods designed to deliver this objective; and
- in conclusion, the proposed model is appropriate for the new way that electricity is, and will be, generated in the UK and will do much to promote significant investment in vital new renewable generation and better achieves the relevant objectives of the current charging regime.

The remaining 7 parties opposed implementation of the proposal on the basis that:

- all available analysis shows that TNUoS tariffs are stable and predictable for all users, regardless of generation type or geographical location; and
- the current charging methodology does not create high tariffs that are a barrier to renewables as there is approximately 9GW of new generation has applied to connect to the Scottish transmission network; and
- TNUoS tariffs are reflective of the costs of transporting electricity across the GB transmission system; and
- there is no evidence that the current tariffs have encouraged generation plant to close early; and
- a uniform tariff across all generation would be discriminatory as generators further from the centre of demand use the transmission system to a greater extent; and
- there will be no significant difference between the infrastructure built for a plant operating at 40% load factor or one operating at 80% load factor, and therefore it is appropriate to charge on a capacity basis rather than a commodity basis; and
- the proposal does not consider moving to a uniform tariff for demand users, which is inconsistent as it suggests that demand users are more able to react to locational price signals; and
- there is no evidence that current arrangements are incompatible with European policy; and
- no compelling quantitative analysis has been provided in support of the proposal.

³ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>

4 Industry Representations

Twenty-one responses were received to the GB ECM-17 consultation document. The responses are summarised in Table 1 below.

Table 1: Summary of consultation responses

Ref:	Respondent	Support	General comments
CR-01	Aquamarine Power	Yes	The current methodology unfairly disadvantages renewables and is not consistent with the European Directive on the promotion of renewables.
CR-02	Argyll & Bute Council	Yes	The current methodology is outdated and disadvantages rural areas and hence renewable generation projects. The lack of a developed charging methodology for Scottish islands exacerbates tariff volatility.
CR-03	Centrica	No	Charges are not volatile and do not discriminate against renewable generation, and the exclusion of demand from the proposal would increase cross-subsidy to Scotland.
CR-04	Council of Scottish Local Authorities (COSLA)	Yes	Transmission charges should actively support the development of renewable generation in Scotland. The existing methodology favours fossil fuel generation over renewables.
CR-05	Drax Power	No	Whilst the current methodology unfairly subsidises southern generation, the proposed methodology is no more cost-reflective and has not been adequately justified. A more appropriate commodity-based charging methodology would be to move transmission charges 100% to demand and charge for using the system during peak times. Review of charges should take place after the Secretary of State has decided the future of TAR.
CR-06	East Ayrshire Council	Yes	Mitigation of high transmission charges would encourage renewable generation.
CR-07	EdF	No	Fixed rate marginal charges are more likely to be passed directly through to consumers, increasing costs. The transmission system has been designed on a capacity basis and therefore charges should be based on capacity as well. Current methodology is compliant with European guidelines.
CR-08	Eon	No	The location of a generator affects the amount of investment required to support it, and therefore charging all generators the same would be discriminatory.
CR-09	ESB International	No	The proposal would increase subsidies to Scottish generators. It is counter-intuitive to retain locational charging for demand when they have less ability to react to locational signals than generators.
CR-10	Forth Energy	Yes	The current arrangements are a barrier to new generation projects and do not align with Article 16 of the EU Renewables Directive.
CR-11	Highlands & Islands Enterprise	Yes	The current locational element is too strong and effectively makes charging to remote areas 'deep' rather than 'shallow' by recovering all costs for remote connections to remote users. Without reform of the charging principals, the UK will not meet the 2020 climate change targets.

Ref:	Respondent	Support	General comments
CR-12	Intergen	No	<p>Fixed rate charges would discriminate in favour of high load factor plant, increasing costs to consumers.</p> <p>Renewables already receive a subsidy via ROCs, further subsidy through the charging methodology would be inappropriate.</p>
CR-13	Orkney Renewable Energy Forum	Yes	The current methodology encourages less efficient generation and penalises island-based generation projects.
CR-14	RWE	No	<p>The proposed charging methodology would have a detrimental impact on new generation in England and Wales.</p> <p>Removing locational charging from generation but not demand would create an incentive for generation to connect to distribution networks to avoid charges.</p>
CR-15	Scottish Council for Development and Industry (SCDI)	Yes	<p>The lack of a robust charging methodology for island locations exacerbates volatility and uncertainty.</p> <p>The methodology is a barrier to renewable development and is discriminatory under European Directive 2001/77/EC.</p> <p>The proposal would align with Government policy objectives, support integration with the European energy market and would not impose extra costs on National Grid or the consumer.</p>
CR-16	Scottish Government	Yes	<p>The current charges discourage economic development in remote areas. They also are in conflict with the spirit of the 28/2009 European renewable energy directive.</p> <p>Without reform of the charging principals, the UK will not meet the 2020 climate change targets.</p> <p>The charging methodology should promote renewable generation, and the proposal would provide an incentive for development of energy generation in Scotland.</p> <p>There is no evidence that locational charging penalises demand users in the same way as generators, and the majority of EU member states operate separate charging for generation and demand.</p> <p>Detailed analysis should be undertaken on the impact of locational charging on generators.</p>
CR-17	Scottish Power	Yes	<p>Without reform of the charging principals, the UK will not meet the 2020 climate change targets.</p> <p>The proposal reflects that deeper system assets are shared with other generators, and would move towards an integrated EU energy market.</p> <p>The current residual charge reflects the costs incurred by transmission licensees whereas the locational charge does not.</p>
CR-18	Scottish Renewables	Yes	The current methodology encourages less efficient generation, does not include island connections and is against the spirit of the European directive on promotion of renewables.
CR-19	SSE	Yes	<p>The proposed methodology would be more stable, less volatile and would create a pro-investment climate. The current methodology is out-dated.</p> <p>The size of the GB queue is not a meaningful indication of the lack of a barrier to renewables.</p>

Ref:	Respondent	Support	General comments
CR-20	Statkraft	Yes	The current methodology inhibits renewable development through high and uncertain charges, and passively supports reliance on non-renewable generation.
CR-21	Welsh Power	No	Current tariffs are stable and encourage appropriate locational development of generation. The proposed charges will lead to a cross-subsidy between high and low load factor generation. A separate subsidy for renewable generation is more appropriate than changing the charging methodology.

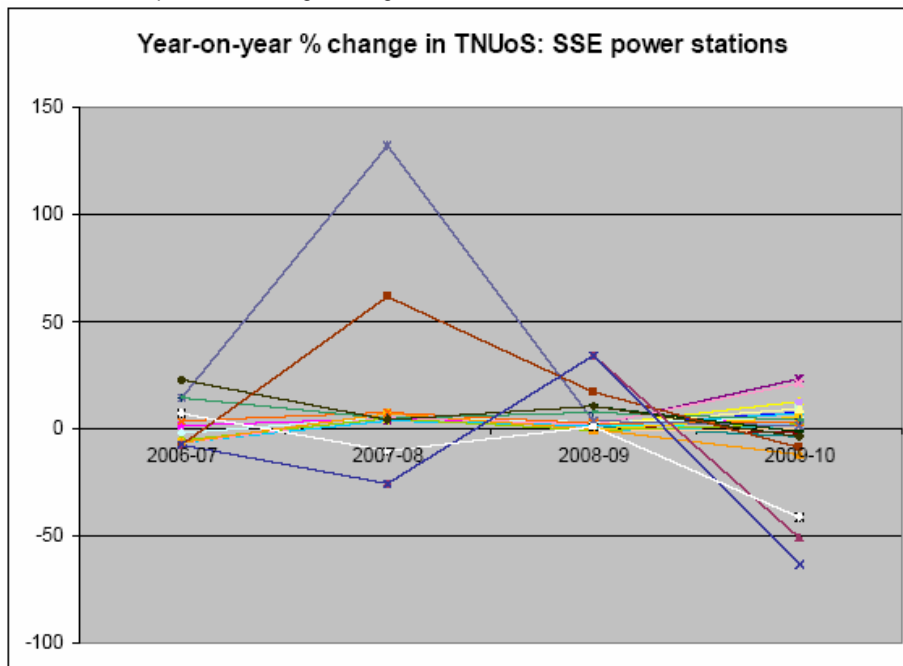
Of the industry responses received to the consultation document which were supportive of the proposals tabled by the Scottish Government, the majority of support was expressed on the basis of those reasons cited in the proposal. Additional relevant information from all responses has been reproduced below in the following sections.

4.1 Facilitating competition

Respondents' views in support

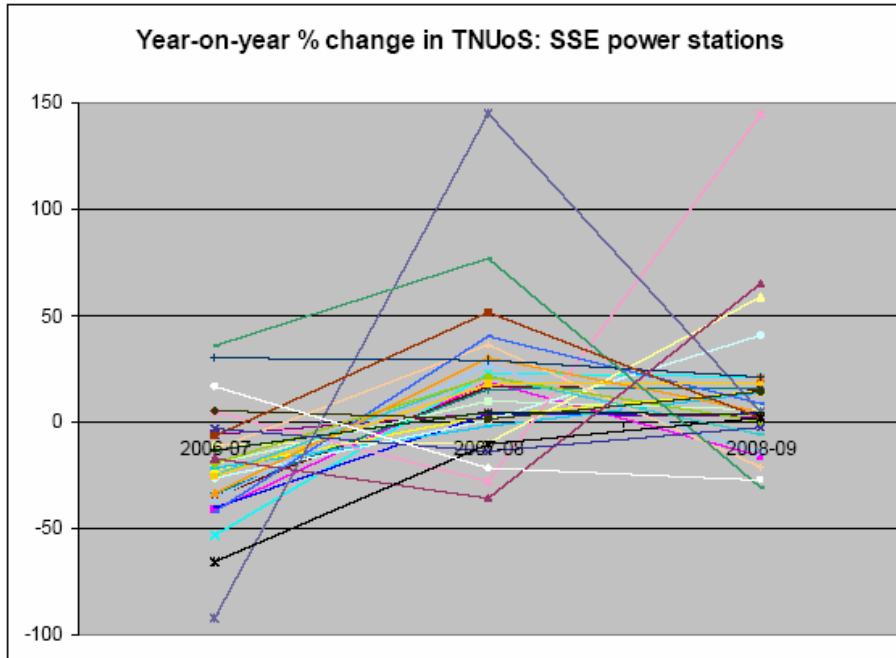
One respondent provided data showing the year-on-year percentage change in the annual TNUoS tariff levied on each of its 30 power stations since April 2005 (Graph 1) to demonstrate charging volatility. The respondent noted that the cost of their tariffs decreased in a third of instances, increased by up to 5% in a further third of instances and for the remaining third increased by up to 132%. The respondent believed that the difference between instability in TNUoS charges and most other cost uncertainties is that TNUoS cannot be controlled, mitigated (by, for example, hedging) or avoided. The respondent concluded that annual fluctuations of -63% to +132% around an average of 2% is not an acceptable degree of stability, particularly when the underlying cost base (the transmission licensees' allowed revenues) has been extremely stable.

Graph 1: Percentage Change in TNUoS Tariffs for SSE Power Stations



The respondent believed that whilst TNUoS tariffs are levied on the basis of installed capacity, the costs associated with generating power are more commonly presented on a £ per MWh basis. Graph 2 restates the year-on-year percentage change in the TNUoS tariff for SSE power stations on this £/MWh basis.

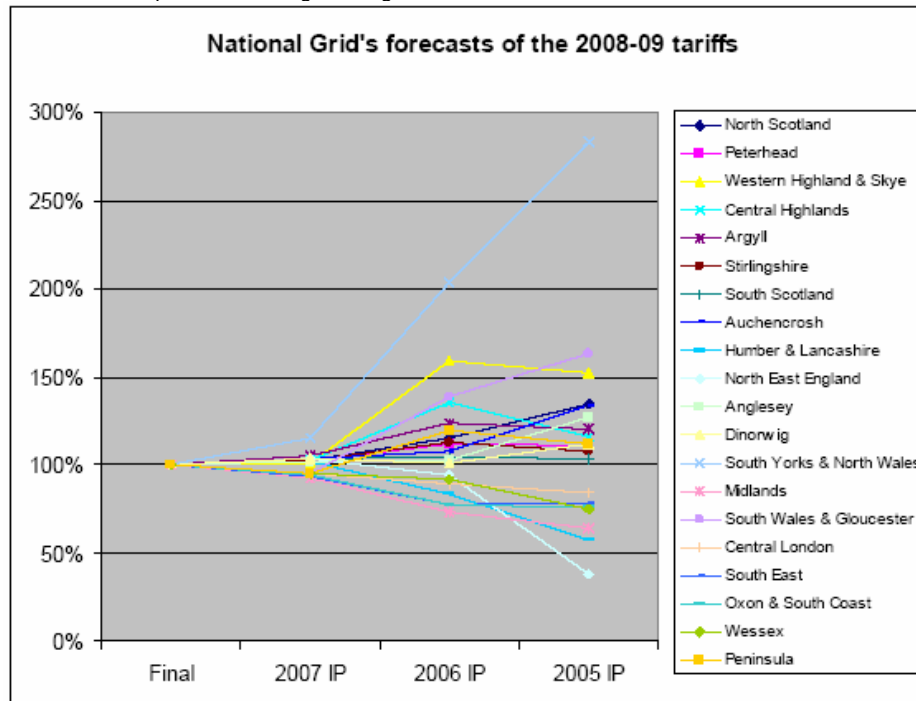
Graph 2: Percentage Change in Actual Charges for SSE Power Stations



The respondent believed that this demonstrated significant year-on-year changes in the TNUoS charge on a £/MWh basis, as in around 80% of instances the year-on-year change has been more than plus or minus 5%.

One respondent provided data showing the percentage change in National Grid's forecast of the 2008-09 locational generation tariff in each of the 20 charging zones from the 2005, 2006 and 2007 information papers relative to the final tariff, adjusted for inflation to a common price base (Graph 3). The respondent believed that this showed that charges were unpredictable as in December 2007, one month before the final tariffs were published, National Grid was able to forecast most tariffs to within 10% of the final tariff; one year earlier, National Grid was able to forecast 80% of the tariffs to within 30% of the final tariff; two years before publication of the tariffs, National Grid was able to forecast 80% of the tariffs to within 50% of the final tariff.

Graph 3: Percentage Change in National Grid's Forecast of 2008/9 Tariffs



Several respondents believed that the lack of a developed charging methodology for islands, including uncertainty over circuit numbers and security standards, subjects island charges to significant volatility.

One respondent provided analysis of the cost of TNUoS charges compared with generation revenue for wind, tide and wave projects (Table 2). The respondent considered that the analysis showed that a much larger proportion of revenue would be paid by island generated electricity compared to other areas of the UK, and therefore it would be fairer if all generators paid a similar proportion of their income on transmission charges – perhaps 8% for wind and 6% for wave and tide.

Table 2: Cost of TNUoS compared with Generation Revenue

Wind

Location	Capacity factor	Power from 1 MW (MWh)	Gross revenue @ £100/MWh	TNUoS charge rate £/kw/yr	Gross TNUoS cost £/kW	Percent cost to revenue
England	20%	1740	174,000	5	5,000	3%
S Scotland	25%	2175	217,500	10	10,000	5%
N Scotland	30%	2610	261,000	22	22,000	8%
Orkney	40%	3480	348,000	60	60,000	17%
Shetland	47%	4089	408,900	55	55,000	13%
	47%	4089	408,900	84	84,000	20.5%

Wave

Location	Capacity factor	Power from 1 MW (MWh)	Gross revenue @ £100/MWh	TNUoS charge rate £/kw/yr	Gross TNUoS cost £/kW	Percent cost to revenue
SW England	40%	3480	348,000	5	5,000	1.5%
S Scotland	40%	3480	348,000	10	10,000	3%
N Scotland	40%	3480	348,000	22	22,000	6%
Orkney	40%	3480	348,000	60	60,000	17%
Shetland	45%	3915	391,500	55	55,000	14%
	45%	3915	391,500	84	84,000	21%

Tide

Location	Capacity factor	Power from 1 MW (MWh)	Gross revenue @ £100/MWh	TNUoS charge rate £/kw/yr	Gross TNUoS cost £/kW	Percent cost to revenue
England	40%	3480	348,000	5	5,000	1.5%
S Scotland	40%	3480	348,000	10	10,000	3%
N Scotland	40%	3480	348,000	22	22,000	6%
Orkney	40%	3480	348,000	60	60,000	17%
Shetland	40%	3480	348,000	55	55,000	15%
	40%	3480	348,000	84	84,000	24%

Further analysis was provided which considered the materiality of transmission charges compared to other costs for a renewable project. The respondent considered that this showed that transmission charges were one of the most important economic factors associated with development of generation projects.

Table 3: Materiality of TNUoS for Renewable Generation

	Base unit	Unit value (per MW)	Unit value over project life (per MW)	Value at risk	Total value risk per yr per MW	Total value risk over project life Min	Total value risk over project life Max
ROC	1% =	£280/yr	£5600	0.5 ROC =	14,000	280,000	280,000
Capacity factor	1% =	£8,700/yr	£174,000	5% to 10% =	43,000 to 87,000	852,000	1,740,000
Capital cost	1% =	£10,000	£10,000	10% to 40% =	N/A	100,000	400,000
Operational cost	1% =	£400/yr	£8,000	10% to 40% =	4,000 to 160,000	80,000	320,000
Energy price	1% =	£261/yr	£5,220	Up to 200%	50,000	1,000,000	1,000,000
TNUoS	£1 =	£1,000/yr	£20,000	0 to +30/40/65	0 to 30,000/85,000	0	600,000 to 1,700,000
Grid capital cost	1% =	£700,000	£700,000	Up to +50%	700,000 to 1,150,000	700,000	1,150,000

The respondent also considered that at the current ROC price, the proposed 0.5 ROC uplift for island energy is roughly equivalent to a £14 difference in the transmission charge compared to the current difference in charges between the islands and Scotland of £40 for Orkney and £30 to £60 for Shetland, and therefore this would not in itself overcome the economic discrimination within the current charging regime.

One respondent provided information that charges for its Blacklaw wind farm in central Scotland are 37% higher now in the fifth year of the current regime than they were in the first year and forecast charges have changed by up to 11% in a year which demonstrated volatility in the charges.

The respondent also compared the total charge for its coal station at Longannet in central Scotland over the last five years under the current methodology to that under a uniform charging methodology assuming a similar load factor for the station for each year (table 4). The respondent believed that under the current methodology the average change year on year is £1.3M compared to £0.6M under uniform charging.

Table 4: Longannet Power Station Transmission Charge

Year	Current Methodology	Uniform Charging
2005/06	£29.1m	£8.9m
2006/07	£30.1m	£9.7m
2007/08	£32.3m	£10.8m
2008/09	£33.1m	£11.3m
2009/10	£34.3m	£11.2m

Respondents' views against

A number of respondents considered that no compelling evidence has been put forward to support the case that this proposal better meets National Grid's licence objectives, and that the interpretation of much of the analysis put forward to support the proposal is flawed. The respondents also believed that the evidence shows that, contrary to claims, TNUoS tariffs over the last 6/7 years have not been unstable, volatile and unpredictable, and therefore have not created an uncertain investment environment for generators.

A respondent believed that it is the capacity of a generator that determines the required investment in the transmission network, not the load factor. For example, if a generator has a 100MW power station which runs at 10% of its capacity for 360 days per year but operates at 90% on the remaining 5 days, the transmission system must nevertheless be built to accommodate the capacity requirements. Hence, any move away from a charge based on capacity toward one based on utilisation will lead to a misallocation of costs and such a scheme will result in a cross-subsidy from high load factor generators to low load factor generators.

A respondent believed that the current charging regime has not contributed to the early closure of generation plant, as National Grid's Seven Year Statement shows the majority of plant that has closed since the start of the decade have been coal and nuclear stations reaching the end of their lives. Going forward the respondent considered that the natural life cycle of plant and the LCPD will be the core factors in determining when generation comes offline rather the TNUoS charging methodology. The respondent also rejected the argument that the current charging regime, with its uncertainty about transmission charges, has encouraged early use of opted-out plants' LCPD hours. In aggregate, LCPD opted-out plant has used approximately 20% of total hours permitted, and given that the Directive runs between January 2008 and December 2015, the total proportion of hours used largely equates to the time passed. It should also be noted that a significant proportion of opted-out plants' running time took place during the summer of 2008 when electricity prices and dark spreads were high which the respondent believed to be the core reason behind opted-out generators' decisions to run.

One respondent considered that as the transmission system is built to cope with the demand at peak times, a proportion of the capacity only being used to provide peak capability. The respondent believed that a more appropriate commoditised charging solution could be to target transmission charges at those that use the system at peak times, as this would provide the right incentives for those that make the most efficient use of the system (i.e. no charges outside peak times), whilst directing charges to those generators that create the congestion on the system during peak periods. The respondent also believed that it may be appropriate to move to a G=0 approach at the same time as implementing such a commoditised TNUoS model, as this would ensure that a truly fair commoditisation scheme would exist, removing the adverse

effects of transmission charging from the economics of the wholesale market and basing it upon demand.

One respondent believed that there is a valid need to ensure that transmission charges do not encourage generators to site in locations remote from the GB transmission system. The respondent considered that this had been a particular issue with the introduction of GB-wide charges in April 2005 where, as a result of the previous 'deep' connection charge being replaced by a 'super-shallow' zonal TNUoS charge, a number of generators applied for connection in very remote locations in northern Scotland which has only this year been addressed in the current charging methodology through the introduction of the local asset charge.

A respondent believed that the nature of the zoning methodology means that generators located close to zonal boundaries could change zones and therefore experience some volatility between charging years, and significant changes in generation at certain areas could result in new zones being established or falling away. However the respondent considered that such events are relatively rare and impact only very small numbers of generators and are not grounds for fundamentally changing the transmission charging arrangements for all users.

4.2 Cost reflectivity

Respondents' views in support

Two respondents considered that there was no evidence that demonstrated that locational charging had a negative impact upon demand customers close to the centre of GB demand, in contrast to the penalties faced by remote generators, and therefore there is no need to change the charging methodology for demand. The respondents also believed that the current methodology already treats demand and generation differently by allowing negative charges for generation.

One respondent believed that the failings of the current charging methodology apply equally to demand-side tariffs, however the impact on competition in supply is less acute given that all suppliers face the same transmission charge for any individual customer.

One respondent believed that it is not misleading to single out the impact of locational charges on generation from supply as it is this locational element which is determined by the Direct Current Load Flow Investment Cost Related Pricing (ICRP) transport model and which is argued by National Grid to be cost reflective. The respondent considered that National Grid's table in the consultation document shows that for 2008/09 generators in the north paid £185M in locational charges whereas generators in the south received £135M, which are updated values of the figures quoted by the Scottish Government and demonstrate the same net cost recovery of £50M with charges to northern generators at almost 4 times this figure.

One respondent believed that charging on the basis of actual use of the system would be more cost-reflective particularly for low load factor intermittent renewable generation. The respondent considered that it would recognise that generators are now being charged separately for the transmission infrastructure assets local to their connection, and therefore believed that the charge for the deeper network they are deemed to be using should reflect these deeper assets being shared with other generators.

One respondent believed that the ICRP locational charges are independent of the costs being incurred by the 3 Transmission Owners, do not reflect the costs incurred by transmission licensees and are thus inconsistent with the definition of cost reflectivity in the licences. The respondent considered that the residual element of the current charge is consistent with the definition of cost reflectivity as it does reflect costs incurred by transmission licensees, and therefore extending the residual element of the current charge to recover all the costs incurred is more cost reflective than the current methodology.

Several respondents believed that several developers reacting to the same locational signal would cause instability in the locational charge, which could have a significant impact on investment as each developer would have to assess the likelihood and impact on charges of their competitors projects.

One respondent believed that the current forward-looking incremental cost approach is becoming increasingly out-dated as evidenced by the following main factors:

- The local transmission assets that can accommodate the full output of a generating station are now charged for through a discrete local asset charge (equivalent to a deep connection charge);
- The Main Interconnected Transmission System (MITS) is not designed to accommodate 100% of generators' outputs. Rather, many assumptions including on generators' load factors, diversity of generation, economic dispatch, and the network parameters and operating regime are taken into account over a range of demand scenarios (not just winter peak demand);
- An increasing number of generators do not have secure access to the MITS;
- Reinforcement of the GB transmission system to provide more capacity is increasingly being achieved through modifications to existing lines (e.g. new conductor, 'hot-wiring') or substation equipment (e.g. series compensation), rather than new line build.

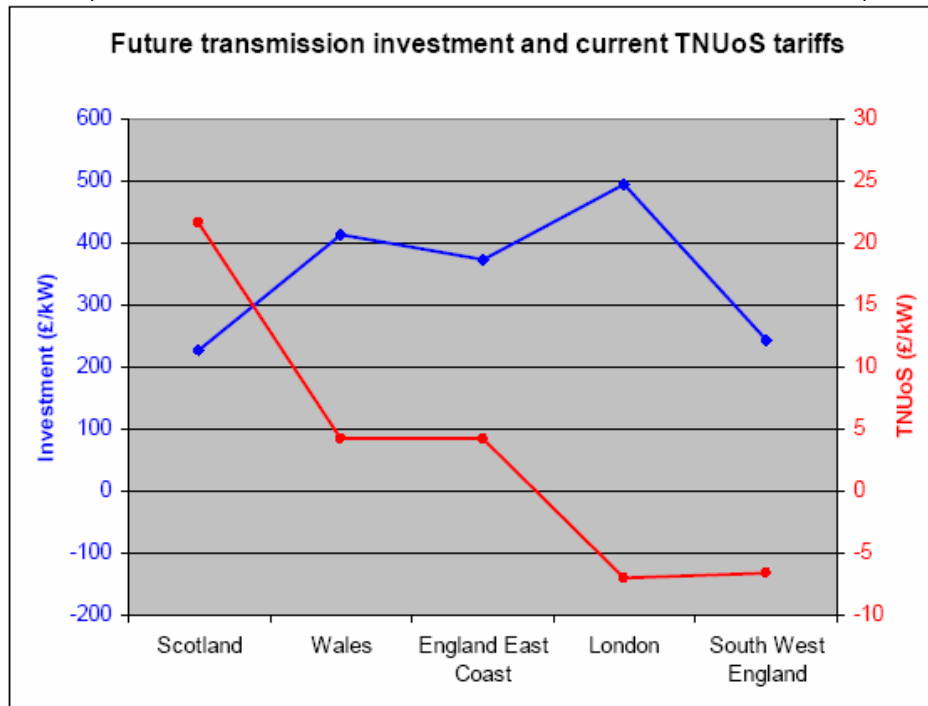
One respondent believed that achieving true cost-reflectivity is an impossible goal, and that as Standard Condition C5 includes the qualifier "as far as reasonably practicable" it could be argued that the relevant objective to facilitate competition could be satisfied at the expense of cost-reflectivity.

One respondent believed that an average charge shares costs across all users and hence is not accurately cost-reflective. However, the respondent considered that the existing zonal charge also shared costs across all users and was less cost-reflective than an average charge because:

- It represents the cost of proposed future (not actual current) users;
- It reflects the cost of proposed future (not actual current) network capacity;
- The single scenario model is not representative of network use, network planning drivers or network investments;
- Includes for negative charges.

The respondent believed that data sourced from the recent ENSG Working Group report on the proposed investments (including for the connection cost of offshore wind) and zonal TNUoS tariff for five regions (graph 4) demonstrated clear evidence that the current charging methodology does not reflect the actual costs of accommodating future generation users on the transmission network.

Graph 4: Future Transmission Investment and Current TNUoS Tariffs from ENSG Report



The respondent believed that the difference between the required investment to accommodate new generation capacity and the TNUoS tariff that is intended to be a forward-looking cost signal is striking. The respondent considered that the most striking difference was around London and the South West where the TNUoS tariff is negative, and in Scotland where the lowest incremental investment cost corresponds with the highest TNUoS tariff. The respondent believed that this demonstrated the significant amount of cost sharing because of the poor cost-reflectivity of the current approach, and this is exacerbated by negative charging whereby the cost of accommodating more generation in negative charging zones equates to both the capital cost of investment in the transmission system plus the payments to generators in those zones.

One respondent believed that an average charge is more cost-reflective of the costs imposed by actual users over the lifetime of their connection to the transmission system, and hence better achieves the relevant objectives. The respondent considered that under this approach there will be sharing, however the sharing would be less extreme than that imposed by the current charging methodology and would be complementary; Scottish users would contribute to the London reinforcement, but equally London users would contribute to the Scotland reinforcement, resulting in an overall small net cost or benefit.

Respondents' views against

Several respondents believed that, as the transmission network is built according to the capacity of generators, a £/MW charge is more cost reflective than a charge based on usage (£/MWh).

Several respondents believed that the omission of demand within the proposal undermines the argument for a fixed TNUoS charge. The current TNUoS methodology was designed with a locational element to reflect the long-run marginal cost of a change in generation and/or demand in a particular point of the network which is calculated through the Direct Current Load Flow (DCLF) ICRP transport

model. This means that generation located in Scotland (which is situated a long way from the core of demand in the south) receives a higher TNUoS charge than generation situated in the south. However, there are significantly lower transmission charges for demand in Scotland than in the south, and the fact that the two go hand in hand is a reflection of the functioning of the load flow model. A respondent considered that to have locational charges for demand but remove this for generation would corrupt the functioning of the entire locational charge to the extent of making it meaningless.

The respondent believed that, as National Grid has shown in the consultation document⁴, omitting demand from the proposed methodology contributes significantly to an increase in cross-subsidy from the south to Scotland. It has been shown that the current methodology enables the three Transmission Operators to largely recover their allowed revenues in their own regions, albeit with a transfer of revenue of £40 million from the south to Scotland. However, the new proposals would see an almost four-fold increase in transfers to approximately £155 million.

Several respondents disagreed with the claim that the ICRP model is not cost reflective. The ICRP model offers a long run marginal cost price signal to generators to locate themselves in areas that will minimise the required investment in the electricity transmission network. As such the respondents believed that the ICRP model helps National Grid to meet its licence objectives of being cost reflective, and that an average cost charge would not reflect individual Users' impact on the transmission network and would therefore decrease cost reflectivity.

A respondent believed that a non-locational marginal price for transmission is likely to be passed through directly to consumers in the wholesale price. Recovering all transmission charges directly from demand customers (and a zero charge for generators) would have a similar effect on consumer power prices without any impact on the value of existing long term power contracts.

A respondent believed that there already exists some cross-subsidy of the Scottish transmission system by users in England and Wales, primarily due to the expansion factors applied to Scottish Power (SP) and Scottish Hydro Electric Transmission Ltd (SHETL) being materially below the true investment cost they represent, and that introduction of a uniform charge would exacerbate this subsidy. The respondent considered that their view is supported by the analysis presented in the consultation on revenue recovery between Scotland and England and Wales relative to the revenue allowed by Ofgem at the last Transmission Price Control Review (TPCR).

4.3 Developments in the Transmission Business

Respondents' views in support

Two respondents believed that even with a significantly expanded interconnector between Scotland and England & Wales there will still be a need for over 3GW of flexible thermal generation in Scotland as back up for intermittent renewables and for security of supply. The respondents considered that existing flexible thermal generation in Scotland will need significant life extension investment if it is to continue to provide this security or alternatively investment will be required in new thermal generation, and both of these forms of investment are being significantly discouraged in Scotland by the high transmission charges.

⁴ P27-28; National Grid, GB ECM-17 Consultation Document, May 2009

A number of respondents believed that the transmission charging and access arrangements should actively support the development of renewable generation.

One respondent believed that excluding of the Scottish Islands from the mainstream charging mechanism is discriminatory, as marine grid links are excluded when more expensive buried cables and land-based lines that are equally long or have greater energy losses are all included.

Several respondents believed that the lack of any new thermal plant being proposed in Scotland supports the argument that the current transmission charging methodology serves to maintain the existing energy mix rather than encourage the development of a mixed, sustainable, secure supply.

Several respondents believed that the current transmission charges that developers must include within their business plans are significant enough to affect the viability of their projects, as demonstrated by the recent developments at the proposed Viking and Statkraft wind farms. The Viking wind farm development on Shetland is estimated to have TNUoS charges of £96/kW and has sought derogation from GB SQSS to request a single circuit transmission connection to mainland Scotland in order to reduce the cost of the connection. The respondents believed that the estimated transmission charges are so high for this project that the developer has deliberately and verifiably opted to reduce its security in order to limit its exposure to unpredictable, high and discriminatory TNUoS.

Several respondents noted that in 2009 Statkraft had publicly announced that it was suspending development of its proposed wind farm on Orkney due to signals that the existing TNUoS methodology would be retained for the foreseeable future.

One respondent believed that the rationale for shallow charging is that costs are socialised across users to reflect the fact that all users benefit from an interconnected transmission system which transports energy from where it is generated to where it is used. The respondent considered that the existing methodology is based on shallow charging principles, but any benefits that remote and island regions might have gained from socialisation of costs are taken away by the locational nature of the charge. The respondent considered that the current locational element results in the cost of a remote or island region connection being almost entirely recharged to remote or island region users through the UoS, which effectively makes the extension to that region charged “deep”. The respondent therefore believed that the current locational element is too strong for remote areas and island regions in the areas of best resource, and needs greater socialisation and dilution.

Several respondents considered that the 9.2GW of generation that is currently applying for connection to the transmission network in Scotland is an inaccurate assessment of the adverse impact on renewable projects and fails to acknowledge the required generation investment levels in the medium to long-term. The respondents believed that even if all this capacity were to connect, Scotland and the UK would still require significantly more generation to meet renewable energy and environmental targets, which will require the contribution of higher cost emerging technologies and projects in remote areas which are finding it difficult to demonstrate financial viability due to existing high locational charges.

One respondent believed that the 9.2GW of new generation in Scotland that have signed connection agreements is not a clear-cut indicator of how much transmission capacity is required as no financial commitment is required. The respondent

considered that it is not credible to use this as a measure of generators' views on transmission charging whilst at the same time arguing that the GB queue is not a firm signal of required investment and that generators should be making a financial commitment to demonstrate their intent. The respondent also noted that in the past three years, over 50 small renewable generators have been built in the north of Scotland by small, new entrant developers, and believed that certainty over the cost of access (even with a deeper connection charge) is a clear factor in facilitating this vibrant market.

The respondent believed that a more meaningful indication would be what happens after a project gains the necessary planning consents. Since the start of 2008, the Scottish Government has granted consent for ten wind farms, six of which were by generators with large existing renewable interests in Scotland with the remainder by smaller, new entrants. Of these four, two consented sites have been sold to SSE and Scottish Power, one developer has entered into partnership with Statkraft and the future of the fourth consented site is currently uncertain. The respondent believed that it is only on consent that developers give serious consideration and commitment to a project, including quantifying the risk associated with unstable and unpredictable transmission charges, and therefore transmission access and charging presents a significant risk to new developments. The respondent stated that it's investment decisions are, in large part, predicated on an assumption that, over the lifetime of the power station, the charging regime must improve, and in it's dealings with smaller developers TNUoS is commonly cited as a reason for either selling or entering partnerships after consent decisions.

A respondent believed that the different level of transmission charges faced by a potential generator in the south of Scotland compared to a project located in the south of England can reduce the rate of return by up to 2% and reduce the net present value of the project by up to £100M. The respondent considered that this differential makes it difficult to secure financing for environmentally beneficial projects in Scotland, particularly at times of limited capital availability.

One respondent considered that comparing charges of £5.78/MWh under the current regime for their Whitelee wind farm (assuming a 30% load factor) to a GB average for all thermal and renewable generation of £1.18/MWh demonstrated that the current regime discriminates against such environmentally beneficial generation because of its location and intermittency.

One respondent provided a summary of transmission tariffs across Europe (table 5), and believed that this showed how out-of-step GB is from the majority of the rest of Europe in relation to the proportion of charges paid by generation and the use of locational charges.

Table 5: Characteristics of the TSO Tariffs in Europe

	Sharing of Network Charges		Price Signal
	Generation	Load	
Austria	15%	85%	Uniform
Belgium	0%	100%	Uniform
Bulgaria	0%	100%	Uniform
Czech Republic	0%	100%	Uniform
Denmark	2-5%	95-98%	Uniform
Estonia	0%	100%	Uniform
Finland	12%	88%	Uniform
France	2%	98%	Uniform
Germany	0%	100%	Uniform
Great Britain	27%	73%	Locational
Greece	15%	85%	Locational for Generation
Hungary	0%	100%	Uniform
Latvia	0%	100%	Uniform
Lithuania	0%	100%	Uniform
Ireland	20%	80%	Locational for Generation
Italy	8%	92%	Uniform
Netherlands	0%	100%	Uniform
Norway	35%	65%	Locational
Poland	0.60%	99.40%	Uniform
Portugal	0%	100%	Uniform
Romania	49.83%	50.17%	Locational
Slovak Republic	0%	100%	Uniform
Slovenia	0%	100%	Uniform
Spain	0%	100%	Uniform
Sweden	25%	75%	Locational

One respondent believed that a detailed analysis should be undertaken of the impacts of locational charging on charges to generators, implications for generators in different locations and for different types of generation, similar to that now underway for locational balancing. The respondent considered that this would allow more informed and strategic decisions to be made in respect of transmission charging, locational balancing and transmission access.

One respondent believed that, beyond 2020, other clean energy technologies such as carbon capture and storage (CCS) will be required to make a major contribution towards decarbonising electricity generation in the UK. The respondent considered that, in supporting extensions to lifespan of thermal plant in Scotland, uniform charging would enable them to be fitted with CCS technology and provide ready access to Scotland's vast potential natural storage capacity.

One respondent believed that Longannet power station has been identified as the best location in GB for retrofitting carbon capture and storage to existing coal plant in view of its proximity to suitable CO₂ storage sites in the central North Sea. The respondent noted that these sites ranged from oil and gas reservoirs with decades of storage capacity through to saline aquifers capable of storing all of Europe's CO₂ for the next 600 years. The respondent believed that the current locational charging system provides an incentive for such a plant to be located in the south of England, not recognising the need to transport the CO₂ back north, and that uniform charging would remove this disincentive.

One respondent believed that over the past 15 years, transmission businesses have evolved and, in the last 5 years, this evolution has become a revolution. The respondent believed that demand has become volatile (not least as a result of increasing distributed generation), the operating regimes of generation users have responded to market incentives and environmental pressures, and new generation of all technologies is connecting to the system at an unprecedented scale. The respondent considered that the impact on the transmission businesses has been a requirement for significant investment and a change to the development and operation of the system. The respondent felt that it was incredible that the charging methodology should be considered sufficiently flexible and robust to take account of these developments in transmission businesses, given that the methodology is based on a simulation of the network and perceived investment requirements to accommodate changes in demand and generation which was created at a time of stability with little change in demand or generation.

Respondents' views against

Several respondents believed that the current methodology for calculation of TNUoS charges was compliant with European guidelines.

Several respondents believed that the steep increase in cumulative offers for connection in Scotland going forward demonstrate that the current TNUoS charging regime does not negatively impact the development of generation projects. Total cumulative offers rise from approximately 1000MW in 2009 to almost 9000MW by 2018, and these connection agreements have been secured in the full knowledge of the current TNUoS charging regime. The recently announced major renewable generation projects in Scotland appear to contradict claims that the current TNUoS charging methodology makes it very difficult, if not impossible, to invest in such projects.

One respondent believed that it would be more appropriate to review the charging methodology either as part of the transmission access review process, or once the Secretary of State has made an announcement on the way forward. The respondent also believed that the appropriateness of the objectives on Transmission Owners should be compared against the conflicting signals that are produced as a result of government policy (for example, with regards to renewable generation technologies).

A respondent believed that renewable generation already receives direct support via the Renewables Obligation therefore it would be inappropriate and inefficient for projects to receive further subsidy. The respondent considered that the Renewable Obligation subsidy provides sufficient incentives for renewable generators and notes that the recent offshore licensing round for wind farms off the coast of England and Wales attracted significant interest despite the proportionately high transmission charges that will accompany such developments.

A respondent believed that the proposed changes to the current ICRP charging arrangements will significantly affect on the economics of new investment in power generation schemes in England and Wales. For example, the proposals may have a significant detrimental impact on proposed onshore wind projects in northern and central Wales. The respondent considered that these schemes, together with offshore England and Wales projects, are vital for the Government to achieve its proposed 2020 targets for renewables.

A respondent considered that to encourage entry of renewable generation within the UK, a more appropriate approach would be the introduction of direct subsidies

outside of the current transmission charging methodology. Such a subsidy could be administered via a tax or feed-in tariff, and would target the money at the plant that is facing the higher costs. The respondent considered that this would prevent perverse incentives arising for the rest of the industry and simultaneously allows funding to be targeted where required amongst the onshore and offshore wind generation. Such subsidies could come from electricity consumers or general taxation, but either way it should be explicit and not seek to distort the functioning of the electricity market.

A respondent considered that the introduction of uniform charging could introduce a perverse incentive for generation to the distribution networks in order to avoid generation charges.

5 National Grid's View

In the pre-consultation document published in November 2008, National Grid invited views from the industry on the alternative charging approach proposed by the Scottish Government. Whilst a majority of respondents supported the proposal, the only quantitative analysis provided was received on behalf of those respondents that do not support the Scottish Government proposal and contradicted many of the views expressed within. As a result, National Grid noted in the consultation document published in April 2009 that it had not received, or been able to provide, any compelling quantitative analysis to support the proposal through the pre-consultation process. In the absence of such evidence it would be inappropriate to progress the proposal as it could not be demonstrated that it better facilitated the relevant objectives.

In the full consultation, National Grid invited industry parties to provide further information in their responses supporting the proposal, in particular welcoming:

- justification as to why it is appropriate to remove locational charges from generation, yet maintain them for demand users;
- quantitative analysis in justification of the claim that the current transmission charging regime results in tariffs which are unstable and volatile;
- quantitative analysis of how the current charging regime has impacted adversely on the development of generation projects;
- quantitative analysis to indicate how the current charging arrangements discriminate against renewable generation;
- quantitative analysis as to how the current charging regime has contributed to the early closure of generation plant;
- detailed evidence in support of the arguments that the ICRP model is not cost reflective and does not encourage investment in new capacity; and
- evidence that the current locational charge for generation is no more cost reflective than a uniform tariff approach;

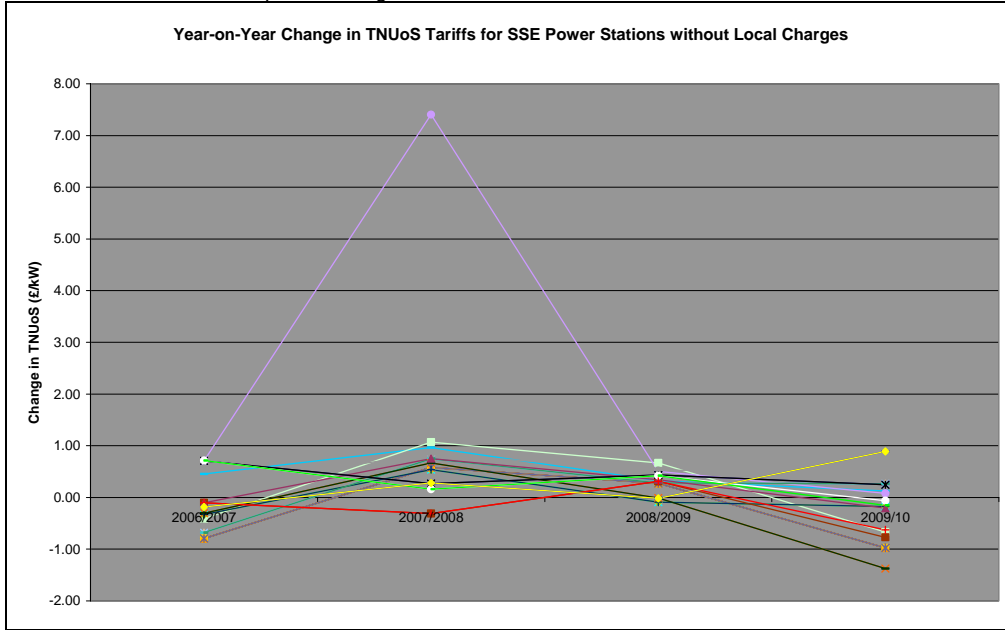
Several respondents provided quantitative analysis on these points in support of the proposal. National Grid has considered this analysis in conjunction with that previously provided in response to the pre-consultation document.

5.1 Facilitating competition

The proposal stated that the current methodology for calculating TNUoS resulted in charges that were volatile and unpredictable in Scotland, and that this had a negative impact upon competition in generation. Several respondents presented information to substantiate this claim.

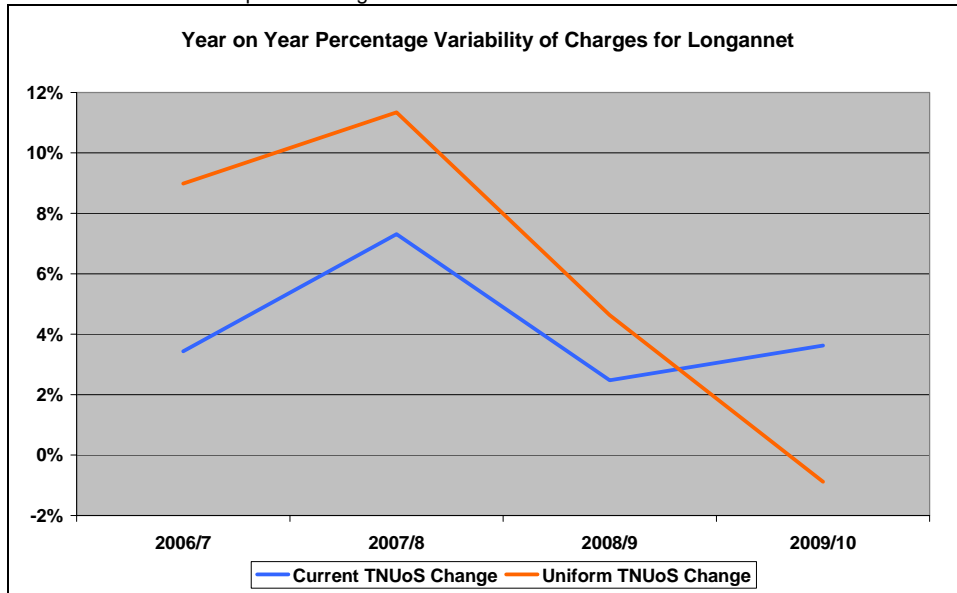
Graph 1 in Section 4.1 was provided as evidence of volatility as it demonstrated large percentage changes in TNUoS tariffs experienced by the respondent on a yearly basis. National Grid considers this to be misleading, as the stations that show the largest percentage change are not situated in Scotland but in the south of England, and when the data is expressed as an actual £/kW change in tariff it can be seen that the majority of the stations experience variability of less than £1/kW (Graph 5).

Graph 5: Change in TNUoS Tariffs for SSE Power Stations



The swings in Graph 1 are therefore due to the lower zonal tariffs in the south of England amplifying the apparent impact of small changes, rather than any volatility in the transmission tariff itself. A clear example of this can be seen from a separate respondent, who used the costs for its coal station in central Scotland under the current methodology compared to those expected under a uniform charging methodology to show volatility (Table 4 of Section 4.1). Interestingly, when these figures are restated in percentage terms, as the first respondent had done, it shows that uniform charging would result in costs that were more volatile rather than less (Graph 6).

Graph 6: Change in TNUoS Tariffs for Scottish Power Site



It is evident from this that it is the difference in starting costs between the two data sets which determines whether similar changes result in high or low percentages, and therefore it may be misleading to display the changes in percentage form as the respondent has done.

The first respondent then restated the yearly change in tariffs (£/kW) as a commodity charge (£/kWh) in Graph 2 in Section 4.1. This showed annual fluctuations of -63% to 132%, which the respondent believed demonstrated an unacceptable degree of instability. Aside from the continued use of percentages, as discussed above, National Grid considers this conclusion to be misleading, as the graph expresses instability in charged costs rather than the TNUoS tariffs themselves, as was requested in the consultation. The data presented in Graph 2 merely indicates which stations have a more variable year-on-year generation output. In the event that a uniform tariff is introduced, displaying charges in this way is still likely to show large yearly variation at some sites due to yearly changes in load factor rather than any volatility in their underlying tariff.

The only site that did experience a large change in tariff in Graph 5 was a station that had changed zone during the 2007 review, and this change was due to the location of the new station not being known when the zonal boundaries were originally created. Whilst zones are beneficial as they provide greater stability to users' tariffs by averaging nodal prices within similar areas, National Grid does not have detailed information on all possible new generation projects and hence there is a risk of occasional rezoning of sites. National Grid agrees with the assessment of a respondent who considered that zoning changes represent the greatest cause of tariff volatility for a generator. Whilst National Grid strives to minimise the frequency of these rezoning events, and hence their impact upon industry parties, we would welcome further discussion on all aspects of the zoning review process, and commit to bringing the issue to the Transmission Charging Methodology Forum. In particular, National Grid would welcome discussion on the appropriateness of introducing a 'soft landing' concept to allow generators who move zones to spread tariff changes over a number of years.

In support of the assertion that the TNUoS tariffs are unpredictable, a respondent presented Graph 3 in Section 4.1 which compares National Grid's forecasts of the 2008/9 tariffs from previous years with the actual tariffs. As a fundamental review of the charging zones was undertaken in 2007, National Grid considers it meaningless to use forecasts from before this time as comparators, as the zones cover different parts of the transmission system. Indeed, a more apposite view of the predictability of the tariffs is given in Graph 5, which clearly shows that year-on-year the vast majority of stations see changes in tariffs of less than £1/kW.

Additionally, Graph 3 does not demonstrate that moving to a uniform tariff would be any more predictable over similar timescales, as a uniform tariff would still be calculated on an annual basis. If predictability is a concern to industry parties then moving to a fixed tariff methodology, such as has been proposed in GB ECM-15, would be more appropriate than moving to uniform charging as it would guarantee predictability over a number of years.

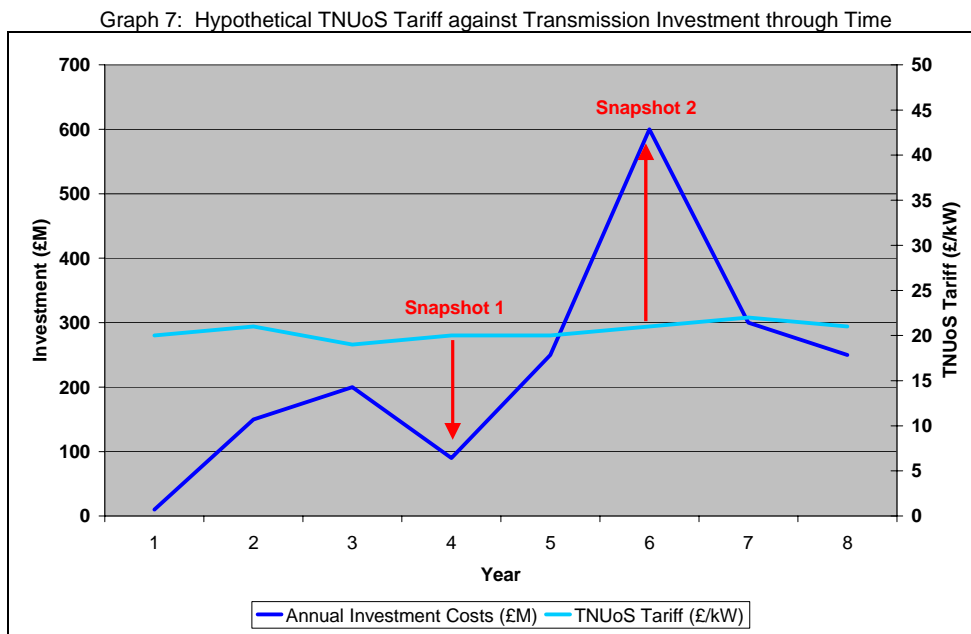
In summary, all the quantitative analysis provided to both stages of the consultation process does not demonstrate that a uniform tariff methodology would better facilitate competition in generation or supply.

5.2 Cost Reflectivity

The proposal claimed that a methodology based on a uniform charge for generators would be more cost-reflective than the existing locational charging methodology. Although many respondents agreed with this assertion only one provided analysis in support, using data sourced from the ENSG Working Group report "Our Electricity Transmission Network: A Vision For 2020".

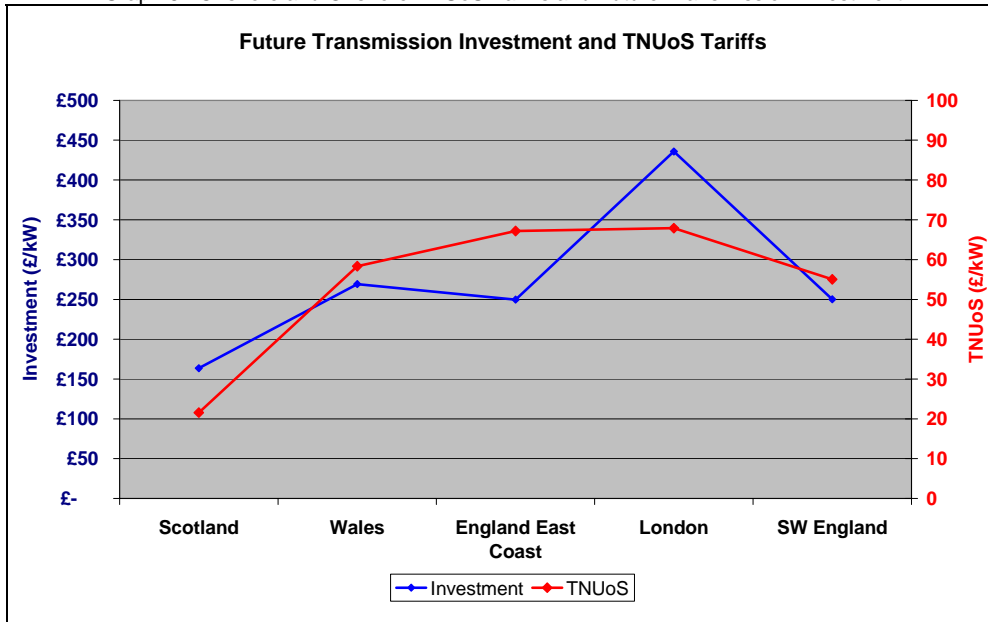
In Graph 4 in Section 4.2, the respondent contrasted the current TNUoS tariffs with the investment required to meet the onshore and offshore generation forecast by 2020. The respondent considered that the difference in the shape of the two curves demonstrated that the current methodology does not reflect the actual cost of accommodating future generation, and hence was not cost-reflective.

Whilst the difference in the shape of the curves in Graph 4 is indeed striking, National Grid considers that there are two fundamental considerations that make it a misleading comparison. The first of these considerations is the difference in time period between the two, as investment to reinforce and maintain the transmission system baselines is fundamentally intermittent, with large costs coming sporadically. The TNUoS methodology, on the other hand, considers investment into the future in order to smooth out these large infrequent costs. A snapshot of investment costs will therefore vary wildly from year to year whilst TNUoS remains relatively constant, and so it is imprudent to assign much weight to any comparison between the two. This is illustrated by the example in Graph 7, which shows that if a comparison is made up to Year 4 the tariff appears to be far higher than necessary, whereas if the comparison considers investment up to Year 6 the tariff appears lower than necessary. This example illustrates how the timing of the comparison greatly affects its apparent meaning.



If in spite of this a comparison of the ENSG investment costs with TNUoS is made, the second consideration that makes it misleading is that the investment costs include for connecting offshore wind farms whereas the tariffs quoted only recover onshore transmission costs. As a charging methodology for offshore generation has been implemented, a more equitable comparison would be to calculate additional offshore TNUoS tariffs based on the forecast generation and offshore network costs that are detailed in the ENSG report. When these tariffs are plotted against the investment per unit generation (Graph 8), it becomes evident that the current methodology compares more favourably once all relevant factors are included.

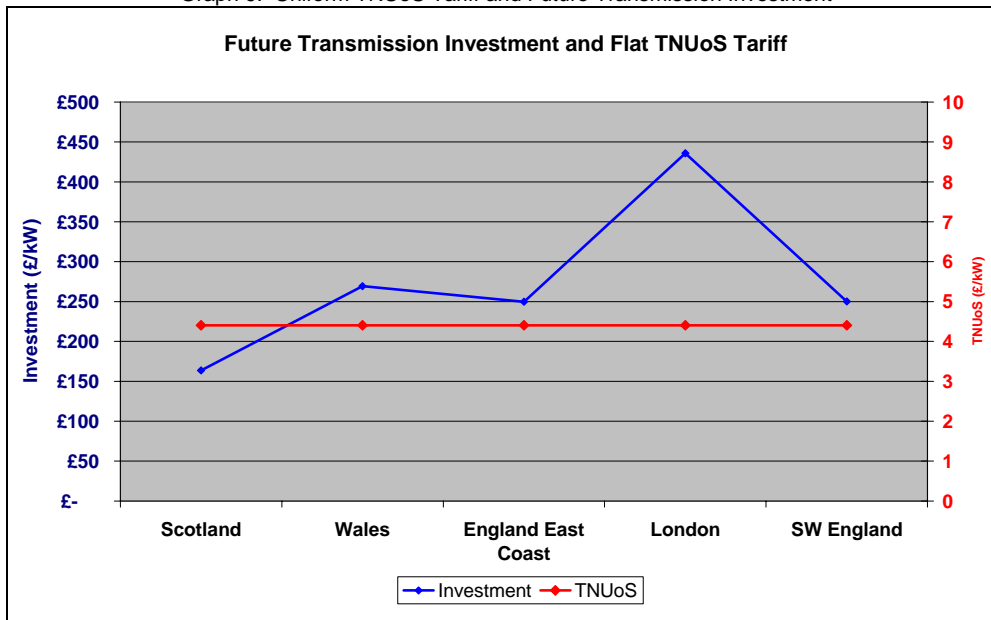
Graph 8: Onshore and Offshore TNUoS Tariffs and Future Transmission Investment



It should be noted that the lower figures for Scotland in investment and TNUoS are due to the ENSG report not including any offshore wind generation or associated transmission investment in Scotland. Such investment has been included for the other areas at an estimated cost of £400/kW.

It is also not apparent that moving to a uniform tariff would be any more cost-reflective. A uniform tariff of around £4.4/kW would recover the appropriate level of revenue for 2009/10, excluding local charges, and when this tariff is plotted against the future investment figures from the ENSG report (Graph 9) it is difficult to argue that it more accurately reflects the costs incurred when compared to Graph 8.

Graph 9: Uniform TNUoS Tariff and Future Transmission Investment



National Grid remains of the view, therefore, that it is more appropriate to base user charges on long-run averages than year by year costs, especially given the proponents' concerns over tariff volatility.

Another respondent considered that the current methodology was less cost-reflective than a uniform tariff because it reflects the cost of future users and network capacity rather than actual users and network capacity. Whilst the marginal cost calculation could be described in this way, as it considers the impact a nominal additional unit of generation would have on the system, it is not clear to National Grid how a uniform tariff would improve the situation, as a flat tariff would reflect neither the cost of future or actual users accurately.

In some responses there was a misconception that the transmission system is built with sufficient capacity to cope with times of peak demand. This is an oversimplification of the design standards enshrined within the SQSS, which allow for a number of sensitivities in generation capacity to be taken into account when identifying the most efficient reinforcement. As wind generation typically has a low load factor, the investment required for such sites may be less than for equivalent thermal plant. National Grid considers that there is scope for discussion on adjusting the methodology to account for low load factor generation such as wind farms, however as the proposal does not differentiate between low and high load factor generation. National Grid also notes that charging on system usage whilst allowing generators to retain rights over capacity would encourage hoarding of capacity, and therefore is less likely to facilitate development of new generation, especially of renewables.

The development of CAP171: Capacity Pricing Mechanism was an attempt to address this issue, by allowing National Grid to tailor access rights (and therefore charges) for different power stations. CAP171 was rejected by the CUSC Amendments Panel, but National Grid would welcome further discussion on the most appropriate way to include load factor into the TNUoS calculation without compromising user's ability to trade their energy in the market.

On the issue of removing locational tariffs for generation but not demand, several respondents believed that any negative consequences of a locational methodology were less important for demand than for generation, and this justified the exclusion of demand from any changes to the tariff calculation methodology. Regardless of whether or not the effects of locational charging are negative, National Grid does not believe that it is appropriate to ignore the consequences to one type of user merely because they are considered to be of lesser importance.

In attempting to demonstrate that the existing charging methodology is out-dated, one respondent noted that reinforcement of the transmission system was increasingly being achieved through upgrading existing lines rather than new line build. Whilst National Grid agrees with the statement if not the conclusion, such developments are accounted for within the expansion factor calculation. The expansion factor represents the annuitised value of the transmission infrastructure capital investment required to transport 1 MW over 1 km, and feeds into the transport model and so into the TNUoS tariffs. As modifications to current infrastructure are generally more costly than new line build, the developments in infrastructure reinforcement that the respondent highlights suggest that the expansion factor may be too low and the review of Charging Condition 2 that was undertaken in 2006⁵ should be revisited.

One respondent suggested that the inclusion of the qualifying statement "as far as reasonably practicable" in Standard Condition C5 could be interpreted such that the relevant objective to facilitate competition could be satisfied at the expense of cost-

⁵ <http://www.nationalgrid.com/uk/Electricity/Charges/gbchargingapprovalconditions/2/>

reflectivity. National Grid considers that the relevant objectives are complementary, and that any change that reduces cost-reflectivity would have a commensurate negative impact upon competition through the ensuing economic inequalities. Indeed, National Grid believes that the objectives of competition and cost-reflectivity are entirely consistent with each other in the context of effective economic competition.

National Grid believes that any generation project proposed in Scotland will create significant costs in terms of investment, as the majority of electricity demand is in the south of the UK. This being the case, there are four possible sources for recovering these costs: generators in Scotland, generators in England and Wales, demand users in Scotland and demand users in England and Wales. It is inappropriate to recover these costs from demand users in Scotland because they reduce these costs, and it is inappropriate to recover them from generators in England and Wales because they can get their energy to the market without such investment. As demand users in England and Wales already pay for around 1/3rd of the total transmission costs in Scotland it seems unfair that they should shoulder this additional burden. It is therefore clear to National Grid that targeting the costs against those who have caused them is always going to be more cost-reflective. That the proposal would seek to change the charging methodology so that generators in England and Wales pay for costs triggered by generators in Scotland seems wholly inappropriate, and no information that has been presented by respondents as part of this consultation has been able to justify it to National Grid's satisfaction.

In summary, all the quantitative analysis provided to both stages of the consultation does not demonstrate that the proposal is more cost-reflective than the existing methodology.

5.3 Developments in the Transmission Business

The proposal stated that the current methodology for calculating TNUoS tariffs was designed for a centralised generation modal and inhibits the development of renewable projects which, by their very nature, are located in peripheral regions of the UK. The introduction of a uniform tariff was believed to better support Government and EU objectives on renewable development, and hence would better account for developments in the licensees' transmission businesses. A large number of respondents concurred with this view, however only limited analysis was provided in support.

The European Directive 2009/28/EC on the promotion of renewable generation was cited by many proponents of the uniform approach, as were both the UK and Scottish Governments' various targets on carbon reduction. Whilst National Grid is supportive of the aims of these various measures, they remain overarching political goals; the scope of the TNUoS charging methodology is limited to ensuring that it produces tariffs that are fair, cost-reflective and transparent. National Grid believes that if financial support is required for the development of renewable generation, it is more appropriate that it comes as a direct Government subsidy independent of the TNUoS tariff. It is not within the vires of National Grid to introduce a subsidy, indeed the transmission licence would need to direct such a change. As a number of respondents have pointed out, due to the untargeted nature of the proposal the introduction of a uniform tariff would only benefit renewable generation in certain geographic areas, and would actually penalise renewable generation projects in England and Wales.

A number of parties pointed to the development of the Viking and Statkraft wind farms as evidence that locational charging is a barrier to renewable generation. National Grid accepts that the anticipated TNUoS tariffs for these projects are high in relation to the rest of the UK, but notes that this is due to their geographical remoteness rather than the fact that they are renewable projects. Were a coal-fired power station to be constructed in the same location it would face the same tariff as a wind farm of similar size. Neither is the driver for projects to locate where the resource is most abundant limited to renewable generation; construction of thermal plant has always had to factor in the distance to the closest source of coal or natural gas. Transporting fuel to site is a significant additional cost for generators, and renewables avoid this cost by locating at the source of their fuel. National Grid therefore does not consider that the existing methodology can be said to be a barrier to renewables.

A number of respondents believed that the fact that approximately 9GW of new generation has applied to connect to the Scottish transmission system was not an accurate representation of the adverse impact that the current tariff methodology has on renewable generation. Only one respondent was able to provide any quantitative analysis in support of this assertion, detailing the progression of wind farms once they have received planning permission.

Whether or not this is a more appropriate measure of adversity, National Grid does not consider that the data the respondent provided supports their argument. The data states that, of the ten wind farms that have been granted consent since the start of 2008, the majority are being developed either by, or in partnership with, the incumbent Scottish generators. The respondent contends that this demonstrates a barrier to the development of renewable generation. National Grid disagrees with this assessment as, of the ten, all but one are still being progressed as viable commercial projects..

The potential of Longannet power station to retrofit carbon capture and storage (CCS) technology was discussed by one respondent, who believed that a uniform charge would remove the disincentive to the fitting of such technology to a northerly site. National Grid considers it worth noting that the respondent is assuming that future CO₂ transportation tariffs are locational, as if they were uniform the incentive to site CCS technology at Longannet over a site in the South of England would again be removed.

In summary, all the quantitative analysis provided to both stages of the consultation does not demonstrate that the existing TNUoS tariffs inhibit the development of renewable projects.

6 Other Comments

One respondent believed that National Grid has undermined the chances of the proposed charging methodology being approved by Ofgem by providing insufficient support, in contrast to GB ECM-18 (Locational BSUoS).

When National Grid raised proposal GB ECM-18 it presented such analysis as it deemed apposite to demonstrate that the relevant objectives would be better facilitated. In raising proposal GB ECM-17 the Scottish Government, Scottish Power, SSE and the Scottish Renewables Forum have had the opportunity to do the same, and it is not National Grid's responsibility to justify other parties' proposals for them. Whilst it has taken due cognisance of the information provided in forming its conclusions on GB ECM-17, National Grid has performed sufficient additional analysis to satisfy the question over whether or not the proposal better facilitates the relevant objectives.

Another respondent considered that it would be more appropriate to consider changes to the charging methodology once the Secretary of State had decided on the direction of the Transmission Access Review, and that the relevant objectives should be reviewed with regard to their alignment with Government policy. National Grid would welcome further discussion on the methodology once the next steps of the TAR are defined.

7 Conclusion

The justification for changing the methodology for calculating TNUoS tariffs for generation from locational to uniform was founded on two overarching principles: that the environment for investment would become more certain through less volatile and unpredictable tariffs, and that renewable generation would no longer be discriminated against as a result of an outdated methodology. Through both the pre-consultation and consultation processes, respondents provided data and analysis both for and against the proposal, all of which National Grid took into account in coming to a conclusion on whether or not the relevant objectives would be better facilitated by implementing the proposed tariff structure.

Considerable evidence was supplied by opponents of the uniform approach which directly contradicted the claims on which the proposal was based, demonstrating that the current methodology produced tariffs that were not only stable for the vast majority of sites, but were also predictable and had no appreciable negative impact upon the development of renewable generation. Regrettably, the evidence provided by respondents in favour of the uniform approach was limited, inconsistent, and relied more on criticism of the current methodology than quantifying any anticipated benefits. In focusing on the perceived flaws of the existing methodology rather than the benefits of the new methodology, supporters of the uniform approach made it difficult for National Grid to be able to unequivocally demonstrate that the proposal would better facilitate the relevant objectives.

There were a number of points where National Grid agreed with the respondents that there were issues with the existing methodology which should be addressed, specifically that no account is taken of the lower investment requirement of wind generation and that volatility in the tariff can be introduced by rezoning. National Grid does not believe that these concerns reflect a fundamental flaw in the TNUoS calculation that merits a complete rejection of the existing methodology, however National Grid commits to discuss these issues with the industry through the Transmission Charging Methodology Forum.

In conclusion, National Grid believes that the ultimate aim of the proposal to move to a uniform TNUoS tariff is to socialise more of the cost of developing generation in Scotland. Whilst this may assist Governments in meeting their own policy objectives, the purpose of the current charging methodology is to recover investment costs in a non-discriminatory, equitable and transparent way. Any change must clearly demonstrate that it better facilitates the relevant objectives than retaining the existing methodology, and as no information provided through either consultation process has demonstrated this, National Grid cannot progress the proposal.