

CONCLUSIONS REPORT

GB ECM-06

**For the charging arrangements associated with SQSS
design variations based on customer requests**

November 2006

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1 Introduction

This conclusions report sets out National Grid's proposals for modifying the Transmission Network Use of System (TNUoS) Charging Methodology to provide a mechanism by which the capital savings associated with GB Security and Quality of Supply Standard (SQSS) single circuit connection design variations arising from customer requests are passed through to those customers.

2 Terms of the original proposed modification

Explanation of the issue

The GB SQSS includes criteria for variations to connection designs. The criteria allow Generators or demand customers to choose a standard of connection which is higher or lower than the specified standard (e.g. a single circuit connection rather than a double circuit connection), provided this does not, either immediately or in the foreseeable future:

- (i) reduce the security of the main interconnected transmission system below the minimum planning criteria specified in the standard;
- (ii) result in additional investment or operational costs to any particular customer or overall, or a reduction in the security and quality of supply of the affected customers' connections to below the planning criteria in the standard, unless specific agreements are reached with affected customers; or
- (iii) compromise the Transmission Licensees ability to meet other statutory or licence obligations.

For the example of a single circuit connection to a generator, in order to comply with the GB SQSS the Generator would have to accept uncompensated access restrictions in the event that the single circuit is unavailable as a result of a fault outage or maintenance outage in order to meet these conditions. Without these arrangements, other customers would be exposed to additional operational (compensation) costs as a result of the single circuit connection and condition (ii) above would not be met.

The criteria for variations to connection designs also state that should system conditions subsequently change, for example due to the proposed connection of a new customer, such that either immediately or in the foreseeable future, the conditions described above are no longer satisfied, then alternative arrangements and/or agreements must be put in place such that the standard continues to be satisfied.

This represents a significant risk to customers that choose single circuit design variation connections, since the connection may be modified to a double circuit connection in the future for reasons completely beyond their control.

Prior to the implementation of the plugs 'shallow' connection Charging Methodology on 01 April 2004, many of the assets associated with generation connection were classified as 'connection'. Consequently, a customer choosing a lower standard of connection design had the capital savings directly reflected in connection charges. The customer was able to compare the savings with the loss of revenue caused by the associated access restrictions and choose the most efficient connection design.

Following the implementation of the plugs methodology, some assets for connecting generation have been reclassified as 'infrastructure' and since infrastructure assets are funded from use of system rather than connection charges, the savings are no longer passed through directly to the customer, but shared amongst all.

Description of proposed modification to the Use of System Charging Methodology

National Grid is proposing to modify the TNUoS Charging Methodology to include two discount mechanisms by which charges can be adjusted in the event of a single circuit design variation connection that arises from a customer request, to reflect the associated capital savings. These are applied separately, with one associated with savings in substation assets and the other with savings in circuit assets.

Definition of substation discount

The substation discount reflects the savings associated with the reduced substation asset requirements for a single circuit connection design. National Grid proposes to reflect these savings with a £/kW discount to the TNUoS tariff:

	Tariff substation discount (£/kW)
33kV connection	3.12
132kV connection	1.05
275kV and 400kV connection	0.49

The substation discount levels would be reviewed at the beginning of each Price Control Review and subject to an annual RPI increase during the price control period.

Definition of circuit discount

The circuit discount is a nodal specific £/kW tariff reduction from the TNUoS tariff for the relevant zonal value. The discount reflects the capital efficiencies from constructing a single overhead line, or cable, as compared to a double circuit. The circuit discount can be expressed as:

$$\text{Circuit discount (£/kW)} = \frac{\text{circuit marginal length(km)} \times \text{expansion constant (£/MWkm)}}{1000}$$

Users eligible for discount

All SQSS single circuit design variation connections that have arisen from a customer request and that have a spur length of 2km or greater will be eligible for the discount.

Justification for proposed modification

National Grid's proposal to modify the TNUoS Charging Methodology to provide a financial signal by which the capital saving associated with a single circuit design variation connection can be reflected, better meets the relevant objectives in Licence Conditions C5 5(b) and C5 5(c). Namely to ensure National Grid applies charges which reflect, as far as reasonably practicable, the costs incurred by transmission licensees in their transmission businesses and properly takes account of the developments in transmission licensees' transmission businesses.

The substation discount reflects the savings associated with the non-distance related assets of a single circuit connection. The substation discount is expressed as a £/kW tariff discount to prevent the possibility of inappropriate negative generation charges for small generators in Scotland. The discounts have been derived from generic cost analysis that has been performed using data from the three transmission licensees to compare the substation costs associated with single circuit and double circuit connection designs.

The circuit discount reflects the distance related asset savings such as the single overhead line or cable and associated plant. The discount is derived from the calculation of the Locational Security Factor and is therefore consistent with the existing Charging Methodology. The circuit discount will be based on the expansion constant which, from 2007 onwards, will be calculated on a GB basis, taking account of data provided by the three transmission licensees.

Suggested alternatives

A respondent suggested that the arrangements would be more consistent with the Charging Methodology if there was no substation discount and the circuit discount was 80% of that proposed.

Another respondent believes that the SQSS design variation criteria should be amended before the Charging Methodology is used to address the issue.

Implementation date

National Grid is seeking to implement this modification proposal to be applied from 01 April 2007, to allow the discount to be reflected upon the entire 2007/08 Charging year. The proposed implementation date for the modification will be 01 April 2007.

To provide 2 months notice and to comply with licensee obligations, the veto/ non-veto decision must be given in timescales that allow the publishing of the final tariffs at the end of Jan 2007. If the Authority chooses to initiate an impact assessment, thereby providing it a 90 day veto period, this date would not be achievable unless the Authority also consented to a shorter notice period for notifying revised changes to users (Section 2.15 of the CUSC).

Proposed changes to the Statement of the Use of System Charging Methodology

See Appendix 2

Impacts on other Industry Documents

There are no impacts on other industry documents.

Users who currently have a connection offer in the GB queue may be interested in changing the connection design to a customer choice connection in light of the implementation of this proposal. The process to be followed should firstly be to contact National Grid to discuss the feasibility of such a connection and to ensure all the criteria, as described within the GB SQSS for design variation connections, are likely to be met. For example, it will be necessary to coordinate this with any other potential connectees at the node. The Modification Application process should be followed so as to cover the necessary study of the contracted background.

It is perceived that, assuming the modification does not affect other connections in the queue, this change of connection design should not effect the users position in the queue and year of commissioning.

3 Responses to the modification proposal

National Grid published a pre-consultation document on 11th August 2006 which set out four possible options:

- retaining the status quo;
- a change to the SQSS;
- a move to a 'deeper' connection charging boundary for generation connections;
- a change to the TNUoS Charging Methodology.

National Grid received 10 written responses to this pre-consultation document, the vast majority of which supported the option to change the TNUoS Charging Methodology. The pre-consultation document and industry responses can be viewed on the National Grid charging website.¹

A consultation document on the TNUoS methodology change option was subsequently published in October 2006 inviting comments and views by Friday 3rd November 2006, to which 10 written responses were received. A number of respondents submitted comments on options that were covered in the preconsultation document and are not covered within this report.

The consultation document and industry responses can also be viewed on the National Grid charging website.¹

High-level summary of responses

Eight of the ten respondents to the consultation document agreed that the proposal to amend the TNUoS Charging Methodology is the correct way forward.

One respondent agreed with the principle of a TNUoS discount for design variation connections based on customer requests, but felt the calculation for the level of discount was inconsistent with the underlying principles of the Charging Methodology and consequently overcompensated.

One respondent did not support the proposed amendments to the Charging Methodology, stating a change alone will not address the issue on a cost reflective and sustainable basis.

Detailed consideration of the issues raised by the respondents, along with National Grid's responses and conclusions, are described in further detail below:

¹ <http://www.nationalgrid.com/uk/Electricity/Charges/modifications/uscmc/>

Choice of single or double circuit connection

One respondent believed that the SQSS should be the minimum level of service and there should be no incentive to opt for a lower level. If this were the case, the respondent argued that the expenditure necessary to provide the level of service would inherently be the economically efficient level. This respondent questioned whether, as both the TO and SO are not in a position to make the economic choice over connection design, how could the Generator.

This respondent went on to explain that under a different Charging Methodology, users have historically been choosing a lower level of security than under the default position and it is felt attention should be paid to reviewing the SQSS before amendments are made to the Charging Methodology. This respondent also stated that the Charging Methodology amendments consisted of offering design variation discounts as an incentive on the developer to derogate from the SQSS and that this was inappropriate.

This respondent concluded that it would be inappropriate for Generators to make transmission infrastructure investment decisions, since this is clearly the responsibility of the transmission licensees. The Generator's choice should be limited to directly charged assets, namely connection assets.

Another respondent commented that the connectee has the responsibility for evaluating the economic impact of access restrictions upon his business model including the valuation of lost revenues. This respondent concluded that it is therefore appropriate that the choice for single circuit connections should remain with the connecting Generator.

National Grid response

National Grid believes that under the current market arrangements, the efficient level of local connection investment depends upon a Generator's valuation of access and therefore it is appropriate that Generators make the decision on their level of connection security.

The option to change the SQSS was explored in the pre-consultation. The option presented including removing the design variation criteria from the SQSS and replacing this with a clause which would allow the transmission owner to design connections to a standard below the minimum provided there was an economic justification. The presentation of this option highlighted that the economic justification would be very difficult since, under the current market arrangements, the Generator is able to set the compensation payable if access is restricted. The compensation payable to Generators connected by single circuits could be capped, but this would clearly be discriminatory, even if they were to also receive a use of system charge discount. For these reasons, National Grid does not believe that a change to the SQSS would provide an appropriate solution.

National Grid believes that the ability to allow a generator design variation as a result of a customer request is a valuable part of the GB SQSS and welcomes Ofgem's views.

National Grid believe that it is worth noting that before the implementation of BETTA, the Scottish Transmission Owner decisions for single circuit connections were not only under a different Charging Methodology but also under different market arrangements. The arrangements for compensation associated with the access restrictions in Scotland have altered since the implementation of BETTA.

National Grid would like to clarify that a design variation connection as a result of a customer request, that meets the relevant SQSS criteria, satisfies the requirements of the SQSS and therefore would not require a derogation.

National Grid does not agree with the statement that the Generators' choice should be limited to connection assets since, under the current shallow charging boundaries, there are very few connection assets associated with generation connections. This suggestion would only appear to be workable if it were accompanied by a return to a deeper connection boundary. This was also proposed as an option in the pre-consultation document and no respondents supported this option.

Reflecting the full cost savings to the generator

One respondent questioned the general principle of passing through a reduced substation element as substation costs are currently apportioned with a non-locational residual split. It was argued that if a new substation is built only 27 percent of the cost is recovered from generation, the remainder from suppliers. The specific generator will only pick up a proportion of this amount.

An example was shown for an additional £1m substation investment for a power station with a TEC that represents 1% of the GB total. Generation would be exposed to a total of £270k, and the generator would see an increase of £2.7k through increased charges. This was compared to the design variation substation discount being proposed, which would be 370 times larger than the existing increased charges. The respondent also noted that even though substation connections at a lower voltage may have higher cost per kW connections all substation cost are smeared equally independent to voltage. In contrast, the substation discount does make the distinction between voltage connections costs and so therefore distorts the substation cost further.

This respondent agreed that the principle of lowering the Nodal Security Factor to reflect a lower standard of connection was correct but did not support the Circuit Discount methodology as suggested in the consultation document. It was argued that the approach incorrectly assumes a security factor of 2 would be applied to the locational charge for a compliant connection and that in practice the Charging Methodology actually uses the Locational Security Factor, which is currently 1.8. Consequently it was argued that the discount recovers 0.2 times (i.e. $1.0 - 0.8$) the Expansion Constant too great.

National Grid response

Whilst National Grid sympathises with the comments made regarding the consistency of the substation discount with the general principles of the methodology, National Grid believe that the discount must fully reflect the cost savings in order to ensure efficient outcomes. The analysis performed by National Grid has demonstrated that the substation costs associated with single circuit connections are significantly lower than those for double circuit connections.

In the example, a cost-reflective substation discount would clearly be equal to the avoided investment costs, and therefore there would be a zero net effect on the charges paid by the remainder of the Generators and suppliers. Alternatively, if the discount ignored the savings associated with substation assets, it would be far smaller and there would simply not be the incentive to forgo firm access and consequently, very few design variation connections would be expected. This would result in increased infrastructure investment which would, as correctly indicated, be spread across both generation and supply to the prescribed ratio.

National Grid agrees that the existing Charging Methodology allocates substation costs equally and independently to voltage and has undertaken to review this in light of the analysis performed to support this proposal.

For the circuit discount, National Grid also believes that it is important to reflect the full cost savings in order to ensure efficient outcomes. Furthermore, National Grid believes that the statement that the existing Charging Methodology assumes a security factor of 1.8 for a double circuit spur is misleading. The locational security factor of 1.8 is derived from a best-fit average of the security factors of all the nodes. These security factors are calculated as the ratio of secured to unsecured marginal MWkm from the relevant node to a 'reference' node. For all double circuits between the node and the 'reference' node, this security factor is 2.0, and for any single circuits, this security factor would be 1.0. Therefore, National Grid does not believe that a discount based on the difference between a security factor of 2.0 and a security factor of 1.0 for the length (in MWkm) of the spur is inconsistent with the Charging Methodology.

'Grand-fathering' of design variation discount

One respondent stated that the SQSS is clear that generators can only opt for non compliant connection designs as long as it does not affect another generator's connection. The respondent believed this to be an important principle that should continue to hold regardless of which generator connects to the system first.

The respondent went on to argue that the loss of the design variation discount upon future connections is not discriminatory. The true discrimination would occur if following the change of security level to a compliant connection the charges did not increase.

A respondent stated that it is unclear how the issue of conflict between generators losing the discount after a mandatory reinforced connection and the discrimination arising should the discount continue post upgrade. It was stated that the resultant uncertainty may act as a disincentive to elect for single circuit connections.

*One respondent strongly disagreed it was appropriate for a generator to lose its design variation discount after it had been accepted as of greater commercial benefit than fully firm connection rights. To do so is to impose a non-optimal solution on the generator. The respondent argued that if the original customer retains the customer choice discount after the second circuit is operational, none of the GB SQSS Customer Choice criteria are infringed. In particular, the second criteria, that no "additional investment or operational costs to any particular customer or overall, or a reduction in the security and quality of supply" is broken if the discount is no longer applied. The same respondent stated that two generators connected at the same point, with equal levels of security could be subject to different Use of System charges because of historic reasons is consistent with National Grid's license requirement to not discriminate **unduly** between users.*

A respondent stated that in the initial generator project assessment, a range of scenarios will need be developed regarding the potential effect of loss of single circuit discount. This in turn will lead to an increase to the risk premium to a project decreasing the viability of single circuit connection and therefore over investment in transmission assets. The same respondent suggested that once the customer choice discount had been agreed the 'contract' terms should be fixed, for either a period of time or the lifetime. In addition, the developers would have to balance the value of

the discount against its exposure to loss of access rights, the commercial decisions of future decisions and the instability of the Charging Methodology.

National Grid response

National Grid believes that the risk that the criteria may not always continue to be met rightly sits with the generator who is requesting a connection below the SQSS standard. A third party connecting at the node in the future is entitled to a GB SQSS compliant double circuit connection and therefore the design variation criteria will no longer be met.

National Grid agrees that this risk of the loss of discount may disincentivise single circuit connection but believes this is appropriate as a deviation below the standards has been requested and responsibility to have no impact on third parties accepted.

The continuation, or 'grand-fathering', of the original generators' design variation TNUoS discount would be inappropriate as the additional cost would be recovered from all other users, and therefore the design variation criterion to avoid additional investment or operational cost to another user would not be met.

National Grid agrees that upon construction of a compliant connection and firm access rights, the loss of the design variation discount is not discriminatory as the design variation customer agrees to accept the risk of future connections.

National Grid agrees risk premiums may be higher with the generators risk of losing the design variation discount from future connections but believe this to be appropriate. That withstanding, this will not lead to over investment as a double circuit is the minimum connection standard and therefore the base entitlement for all generation. National Grid agrees that the generator will be exposed to commercial risks such as loss of access rights and future effects of connecting third parties but by deviating below the minimum connection security of the SQSS, they are the correct party to do so.

Size and incentive properties of the discount

Two respondents supported the proposed TNUoS Methodology amendments but assurance was requested by one that the discounts were cost reflective and the other that the discounts do not exceed actual capital savings.

Several respondents made comments on the incentive properties of the discounts:

- A respondent suggested that the higher substation discount for connections at 33kV, rather than 400kV, discriminates against large power stations but that these stations need to be connected at the lowest cost and therefore this was a suitably pragmatic solution. The same respondent stated that the discount had been designed to offset the lost value to a small renewable generator for the loss of ROC during loss of access. The respondent concluded that it is entirely appropriate to target design variation connection to renewables, yet it would have been preferred for National Grid to explicitly state this.*
- One respondent believed that it was inappropriate to the use of Charging Methodology as a mechanism to incentivise generators.*
- A respondent, whom agreed that the methodology proposed was both adequate and pragmatic, stated that National Grid has designed a discount that will, in practice, only be viable for two types of generation. Firstly onshore*

units connected at a lower voltage, therefore eligible for a higher substation discount or offshore, where marginal circuit lengths are likely to be long. Another respondent stated the arrangements are clearly and appropriately beneficial to offshore developments however they would not want it to encourage offshore conditions at a lower voltage so as to increase losses.

- A respondent presented analysis to equate TNUoS tariff savings with an equivalence of lost days of access compensation. This ranged between 3 and 12 days for a ROC accredited wind farm, depending on voltage. This respondent believed this to be adequate incentive and risk for a project to generally accept. However, another respondent also performed analysis (but did not include details of this) and reached a different conclusion and following discussions with developers, believed the discounts are not sufficient to encourage developers to derogate.*
- Two other respondents were not convinced that the proposed discounts will provide sufficient single circuit incentive in all but the longest of connections. A review was suggested to ensure the right incentive balance is achieved.*

National Grid response

The design variation discounts were not designed to promote any particular type of generation but as an accurate cost reflection of GB wide capital savings, intended to result in the most efficient investment outcome for the industry as a whole. It is believed that the discounts have been accurately derived from generic data from Transmission Licensees. If the generator judges the discount is insufficient to make a single circuit connection viable for a specific circuit length then National Grid believes that a double circuit connection is the appropriate solution for the industry as a whole. If any specific generation sector is more likely to request a single circuit connection, then this is purely a function of its operational characteristics and location. A spur connection that was suggested to operate at a voltage lower than the most economical solution as a result of far higher operational costs would therefore not meet the SQSS criteria and would not qualify.

National Grid believes that generic costs provide transparent and predictable discount to facilitate the forecasting of charges across a number of scenarios. In extreme circumstances, certain configurations may result in differences between generic and actual costs savings but National Grid believes the benefits of transparency and simplicity outweighs this feature.

Users eligible for discount

One respondent noted that the design variation discount should be applied to the whole GB system and, in particular applied to existing connections where availability restrictions are applied due to transmission design decisions taken under the previous 'deeper' connection charging methodology. Another respondent stated there was "great importance" that the discount should be available for all connections already built, those being built and those yet to apply.

Two respondents agreed that the introduction of a 2km deminimus circuit length for the circuit discount was an improvement on the option described in the initial thoughts consultation and that it prevented a step change at a spur length of around 50km and improved cost reflectivity and transparency.

National Grid response

National Grid agrees that the design variation discount should be applied GB wide to all existing single circuit design variation connections that have arisen from a customer request, those that are currently being considered and future applications.

National Grid agrees that the use of a de minimus spur length of 2km, rather than TNUoS zoning criteria, avoids any potential discrimination between users and removes the risk that significantly long spurs do not qualify for a discount.

Points of clarification

A number of users sought clarification on the proposal and/ or wider access arrangements. These are discussed below:

Sub 132kV Transmission

A respondent questioned why a transmission Charging Methodology should relate to voltages below 132kV. Additionally, the relatively lower cost saving associated with a 132kV substation as compared to a 33kV substation was queried as counterintuitive. The respondent also raised the lack of 275kV discount data.

National Grid response

In Scotland, scenarios exist where substation assets at the remote end of a 132kV transmission line designated as transmission assets. Typically the connection of the users has been performed at 33kV for economic case reasons and the substation is owned by the transmission licensee due to the potential shared nature of the substation. The 33kV connection discount is correctly larger than that of a 132kV connection because as shown in Appendix 2 the lower voltage connection avoids the additional cost of the second supergrid transformer, as well as the same cost being spread over a smaller typical TEC. Additional generic capital cost differential data was requested, and provided, from all transmission licensees for 275kV single circuit connections. It was found that the costs were sufficiently close to those previously provided for 400kV connections such that a single 275/400kV tariff could be determined.

Asset life

One respondent queried how the asset life for plant is factored into the discount.

National Grid response

The asset life for a connection is taken into account with the use of an 'annuity factor'. Assets are assumed to have an asset life of 50 years and a cost of capital of 6.25% has been assumed to calculate the annual 'cost' or annuity factor. This is consistent with the calculation of the circuit expansion factors within the TNUoS Charging Methodology. A share of the annual transmission overheads is also factored into the annual cost based upon the Gross Asset Values. These factors allow the absolute capital savings to be converted into annual savings and therefore £/kW tariff discounts.

Offshore tariffs

A respondent identified that the transport and tariff model could be used to calculate indicative tariffs onshore but it may prove too complex for offshore connections where a new zone would be generated and expansion factors are yet to be calculated. This respondent mentioned whether National Grid intended to provide this type of information or whether the user would be required to derive it independently.

National Grid response

National Grid believes that the transport and tariff model will automatically create new TNUoS zones, when required, and will demonstrate the simple procedure in one of the forthcoming industry forums, to anticipate the construction of multiple offshore zones. National Grid expects once information sources and offshore Charging Methodology has been agreed with the industry offshore expansion factors will be published in the Statement of Use of System Charging Methodology to facilitate the calculation of indicative charges.

Implementation clarification

A respondent requested clarification on the issues listed below:

- 1. Changes to the STC (believes the 90 day turn around time should be reviewed)*
- 2. Impact on the optimisation process. It has taken two years to get all the GB connections offers issued*
- 3. Treatment of pre-BETTA and post-BETTA connection offers*
- 4. The treatment of clusters*
- 5. Treatment of complicated connections not covered by one of the discounts proposed*
- 6. The change process following an offer but before connection. An example is given of if planning decisions after a line route, changing the TNUoS discount should the connection offer be reopened? Similarly, if a developer withdrawals from a cluster, should the connection offer be reopened for the remaining developers*

National Grid response

National Grid welcomes the raising of the specific industry document questions. National Grid's responses are described below:

1. National Grid does not agree the 90 day application offer turn around duration would require alteration as customer choice is already an integral part of the process and we do not believe the discounts will significantly add to the process. There are already mechanisms for extension to the process where necessary as described within the Connection and Use of System Code – Exhibit I and STCP 18 -1 – Application and modification procedure.
2. As the vast majority of changes stemming from a change of connection standard would be local rather than the wider system, there are no significant repercussions anticipated on the current optimisation of the GB connections queue or any substantial requirement for extensive reprioritisation.
3. National Grid believes that pre and post BETTA connections will be treated equally under this amendment. All single circuit connections that meet the SQSS design variation criteria will receive the appropriate discount.
4. Assuming all generators within a cluster accept and meet the SQSS design variation criteria, a single circuit connection is acceptable. This only affects local infrastructure. If any of the users with a connection application at a node, at this time or the future, do not want a single circuit connection, a fully compliant connection would be constructed.
5. National Grid believes that a balance between cost reflectivity and transparency / complexity has to be made by defining enough connection designs to cover the majority of scenarios without over complicating the

discount methodology. The proposals offer a substation discount for single circuit design variation connections and a circuit discount for single circuit greater than 2km in length. Other non- standard connections are not covered by this amendment.

6. National Grid does not expect that post- signature, pre-construction changes alone will warrant a re-opening of the connection offer, unless substantial wider network changes were generated. All generators face the risk that as a result of other connections taking place (or disconnections) that the works may change and consequently so may the TNUoS charges. This is the case for design variation connections or otherwise.

Stability and certainty

One respondent stated that generators are looking for stability and certainty in TNUoS charges and this proposal, if implemented, will only result in further instability and uncertainty.

National Grid response

National Grid agree that stability and certainty are important factors within the GB Charging Methodology but do not believe that the discounts proposed would undermine this position. Indeed, this position was supported by a number of responses from developers in reply to both the pre-consultation and consultation documents.

Other issues raised

Ad-hoc modifications to the TNUoS Charging Methodology

A respondent believed that the continued “tinkering” to address ad-hoc issues is destabilising the industry and ultimately, the insecurity and uncertainty of the future Use of System Charges is jeopardising the development of renewable generation in the north of Scotland.

National Grid response

National Grid does not agree that this proposal represents ‘continued “tinkering” to address ad-hoc issues’ but rather a necessary change which is entirely consistent with our Transmission Licence obligation to keep the Charging Methodology under constant review for the purpose of ensuring it meets the relevant objectives. National Grid welcomes Ofgem’s comments on this subject.

4 Changes to the proposal in light of representations made

In light of comments within a response to the consultation document and discussions at a TCMF meeting, generic costing data was requested for 275kV connection and an average 275kV / 400kV substation discount has subsequently been determined.

A typographical error was identified from the consultation document where the circuit discount was incorrectly defined (Appendix 2.23), a corrected version is available on the website, which reads:

$$\text{Circuit discount } (\text{£/ kW}) = \text{Lsc (km)} \times \text{EF} \times \text{EC } (\text{£/ MWkm}) \times 0.001$$

One respondent queried the ‘0.001’ multiplier as shown in the equation above. The 0.001 multiplier is simply a conversion of units for the discount, from £/ MW to £/ kW, the unit in which the TNUoS tariffs are typically expressed.

5 How the proposed modification better meets the relevant licence objectives

National Grid's proposal to modify the Statement of the Use of System Charging Methodology better meets the Relevant Objectives in Licence Conditions C5 5(b) and C5 5(c). Namely to ensure National Grid applies charges which reflect, as far as reasonably practicable, the costs incurred by transmission licensees in their transmission businesses and properly takes account of the developments in transmission licensees' transmission businesses.

6 Timetable for implementation

Subject to the Authority's power to veto this modification proposal, National Grid intends to make the proposed changes to the Transmission Network Use of System Charging Methodology for implementation on 1 April, 2007.

National Grid notes that if the Authority chooses to undertake an impact assessment, as suggested by one respondent, thereby providing it a 90 day veto period (as opposed to 28 days) this date would not be achievable unless the Authority also consented to a shorter notice period for notifying revised changes to Users (Section 2.15 of the CUSC). National Grid considers this would not be problematic as the industry has been closely involved in the development of these proposals and are familiar with the principles. If such consent were not forthcoming than a revised implementation date of 01 April 2008 is proposed, as a mid- year implementation would require the adjustment of every generator and suppliers TNUoS charges which National Grid does not believe would be justified as this would introduce uncertainty for the following year.

APPENDIX 1 – Proposed drafting of the Statement of the Use of System Charging Methodology

Chapter 2: Derivation of the Transmission Network Use of System Tariff

Deriving tariff discounts for customer choice design variations

2.21 Generators that have elected to be connected by a single circuit, of a length of 2km or greater, under a SQSS design variation qualify for application of a circuit discount and a substation discount. The discounts reflect the reduced asset requirements of a single circuit.

2.22 The magnitude of the substation discount is dependent on the operating voltage of the connection. The substation discount is applied to the final zonal TNUoS tariff for the spur's zone. An illustration of the substation discounts calculated for 2007/8 are shown below. The substation discount is subject to an annual RPI increase during the price control period.

	Typical power station size (MW)	Tariff substation discount (£/kW)
33kV	50	3.12
132kV	110	1.05
275/ 400kV	600	0.49

2.23 The circuit discount can be calculated by:

$$\text{Circuit discount (£ /kW)} = \frac{L_{SC} \times EF \times EC}{1000}$$

Where

L_{SC}	=	Length of single circuit (km)
EF	=	Expansion Factor
EC	=	Expansion Constant (£/MWkm)

2.24 The circuit discount and substation discount are applied to all customer choice SQSS design variation single circuit generator connections with a circuit length greater than 2km.

2.25 The combined discount, in £/kW, is applied to the final tariff for the zone to which the node is situated as under existing zoning criteria. The discount per node will be published in the **Statement of Use of System Charges**.

The Residual Tariff

2.39 The total revenue to be recovered through TNUoS charges is determined each year with reference to the Transmission Licensees' Price Control formulas less the costs expected to be recovered through Pre-Vesting connection charges. Hence in any given year t, a target revenue figure for TNUoS charges (TRRt) is set after adjusting for design variation discounts and any under or over recovery for and including, the small generators discount is as follows:

$$TRR_t = R_t + D_{DV} - PVC_t - SG_{t-1}$$

Where

TRR_t = TNUoS Revenue Recovery target for year t

R_t = Forecast Revenue allowed under National Grid's RPI-X Price Control Formula for year t (this term includes a number of adjustments, including for over/under recovery from the previous year). For further information, refer to Special Condition AA5A of National Grid's Transmission Licence.

D_{DV} = The total GB discount for Design Variation for year t

PVC_t = Forecast Revenue from Pre-Vesting connection charges for year t

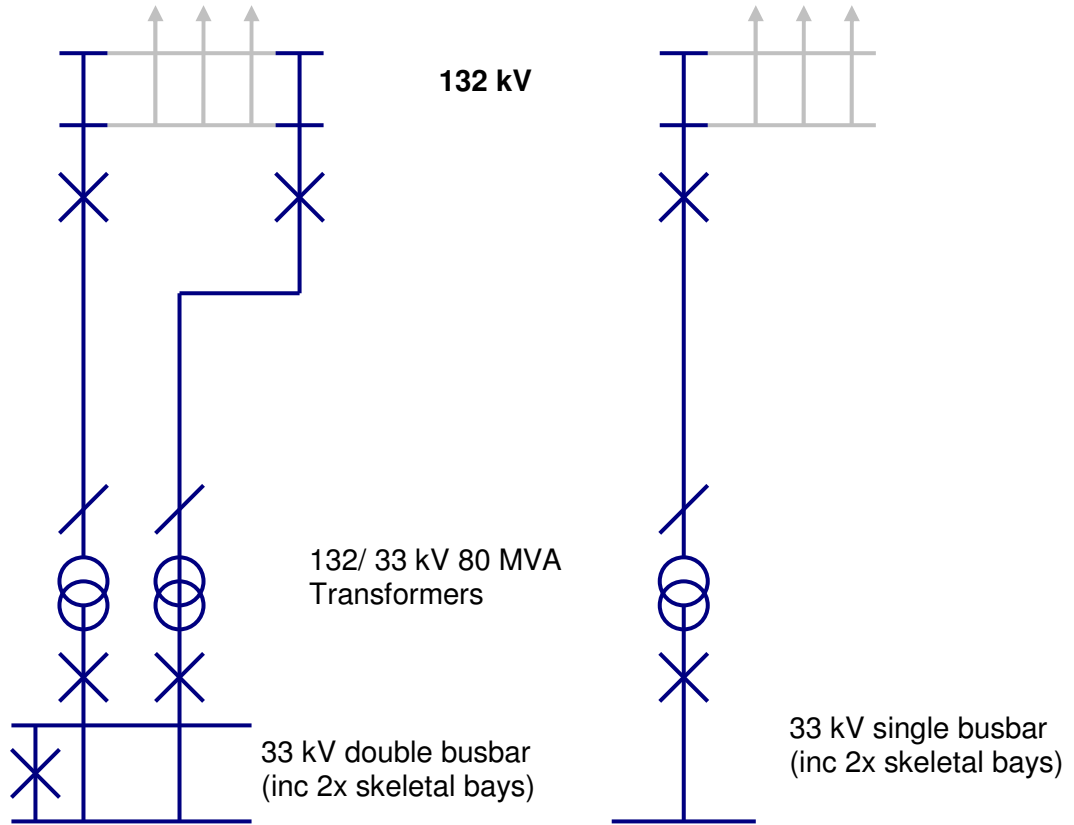
SG_{t-1} = The proportion of the under/over recovery included within R_t which relates to the operation of statement C13 of the National Grid Transmission Licence. Should the operation of statement C13 result in an under recovery in year $t - 1$, the SG figure will be positive and vice versa for an over recovery.

APPENDIX 2 – Generic Costing of Single and Double Circuit Connections for Substation Discount

In order to determine the correct level for the substation discount for single circuit design variation, a data request was made to the Scottish transmission owners and the same data collated by National Grid for England and Wales. The data request was made under procedure 14-2 of the STC. Differential generic costs were sought between the most likely configurations of both levels of connection. The table and schematic diagrams below illustrates the type, location and number of assets incorporated within both scenarios:

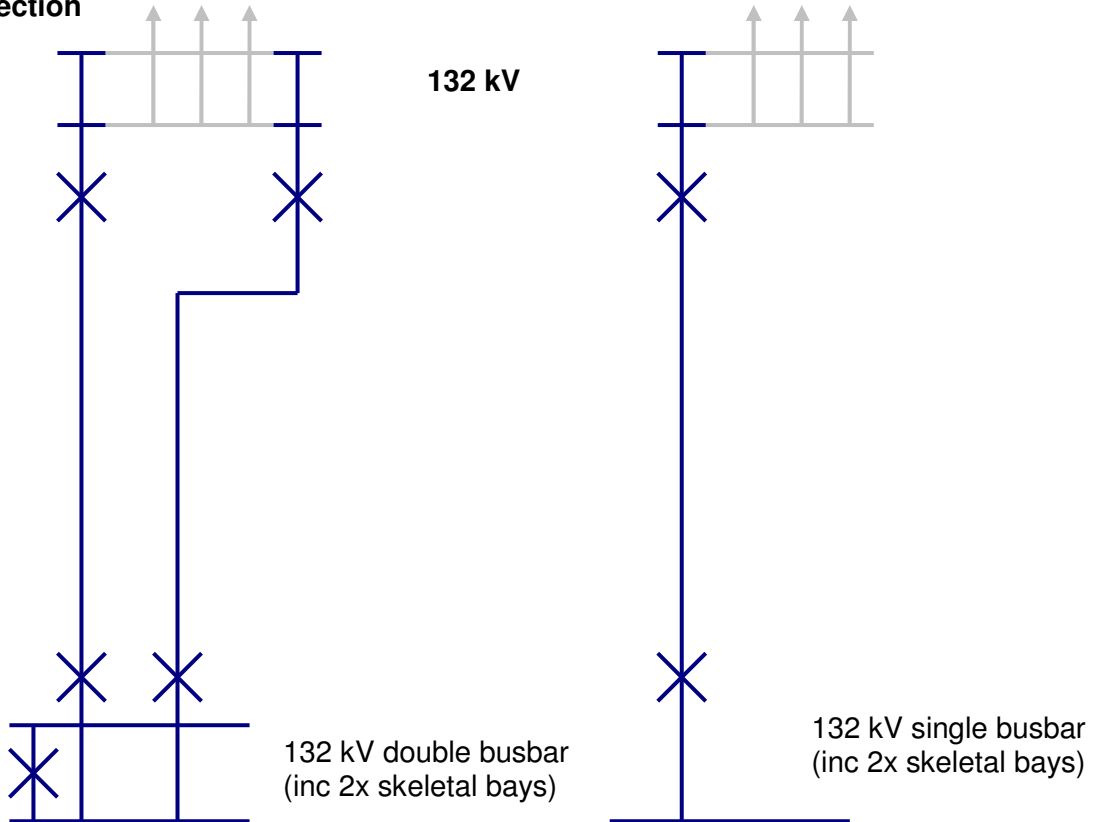
Substation	Asset	Single Circuit	Double Circuit
MITs Sub	Feeder bays	1	2
New Connection Sub	Busbar arrangement	Single	Double
	Bus Coupler	0	1
	Feeder bays	1	2
	Skeletal bays	2	2
	SGTs (33kV only)	1	2

33kV Connection



Extendable for future additional connections

132kV Connection



Extendable for future additional connections

275/ 400kV Connection

