Scottish & Southern Electricity Networks

Scottish Hydro Electric Transmission plc

Basis of Transmission Owner Charges

Effective 1 April 2019

The Gas and Electricity Markets Authority is to approve this statement.

Contents

Scottish & Southern Electricity Networks

Appendices

1 Introduction and Principles

1.1. This statement is produced by Scottish Hydro Electric Transmission plc (SHE Transmission), the Transmission Owner (TO), which sets out the basis of charges for the provision by SHE Transmission to National Grid Electricity System Operator (NGESO), the System Operator (SO) of transmission services as specified in the Transmission Licence and System Operator Transmission Owner Code (STC).

1.2. This Statement is effective from 1 April 2019.

1.3. SHE Transmission is obliged, under Special Condition 8C of its Electricity Transmission Licence, to prepare a statement approved by the Authority setting out the basis upon which charges will be made for the provision of transmission services in such form and detail as shall be necessary to enable NGESO to make a reasonable estimate of the charges to which it would become liable for the provision of SHE Transmission's services. These services include the planning, development, construction, maintenance and operation of new and modified connections to the licensee's transmission system.

1.4. Special Condition 8C requires that the statement shall in respect of connection to the licensee's (SHE Transmission) transmission system include:

a. A schedule listing those items (including carrying out of works and the provision and installation of electrical lines or electrical plant or meters) of significant cost liable to be required for the purposes of connection (at entry or exit points) to the licensee's transmission system for which Site Specific Charges may be made or levied and including (where practicable) indicative charges for each such item and (in other case) an explanation of the methods by which and the principles on which such charges will be calculated;

b. The methods by which and the principles on which Site Specific Charges will be made in circumstances where the electrical lines or electrical plant to be installed are (at the licensee's discretion) of greater size or capacity than that required;

c. The methods by which and the principles on which any charges (including any capitalised charge) will be made for maintenance, replacement and repair required of electrical lines, electrical plant or meters provided and installed for making a connection to the licensee's transmission system;

d. The methods by which and the principles on which any charges will be made for disconnection from the licensee's transmission system and the removal of electrical plant, electric lines and ancillary meters following disconnection; and

e. Such other matters as shall be specified in directions issued by the Authority from time to time for the purpose of this condition.

1.5. The charges shall consist of the General System Charge, Site Specific Charges and Other Charges. The methodology for calculating these three classes of charges is set out in parts one, two and three of this statement. The **General System Charge** recovers all costs for providing, replacing and/or refurbishing SHE Transmission's infrastructure assets and all costs associated with the replacement and/or refurbishment of Pre-Vesting transmission connection assets.

1.6. **Site Specific Charges** relate to Post Vesting connection assets and recover all costs for providing, replacing and/or refurbishing these connection assets. Three types of connection assets are referred to in this statement: Pre Vesting (installed before 31 March 1990); Post Vesting Pre BETTA (installed between 1 April 1990 and 31 March 2005); and Post BETTA (installed after 31 March 2005).

1.7. In general, connection assets are defined as those assets solely required to connect an individual User to the SHE Transmission system, which are not and would not normally be used by any other connected party (i.e. "Single User Assets"). For the purposes of this statement, all connection assets at a given location shall together form a connection site.

1.8. Connection assets are defined as all those Single User Assets which:

a. For Double Busbar type connections, are those Single User Assets connecting the User's assets and the first SHE Transmission owned substation, up to and including the Double Busbar bay;

b. For teed or mesh connections, are those Single User Assets from the User's assets up to, but not including the HV disconnector or the equivalent point of isolation; and

c. For cable and overhead lines at a Transmission Voltage, are those Single User connection circuits connected at a Transmission Voltage equal to or less than 2km in length that are not potentially shareable.

1.9. Shared assets at a banked connection arrangement will not normally be classed as connection assets except where both legs of the banking are Single User Assets under the same TO Connection Agreement. Other definitions of connection assets might apply.

1.10. Indicative Gross Asset Values ("GAVs") of connection assets for illustrative purposes are given in Appendix A.

1.11. SHE Transmission may, at the request of NGESO, carry out other work, which is not covered by General System Charge or Site Specific Charges, including, for example, outage rescheduling, dealing with applications for connection or obtaining consents. The principles for calculating such Other Charges are also set out in this statement and, where absent, charging treatment will defer to the Connection and Use of System Code (CUSC).

2 Transmission Owner Revenue Restriction

2.1. The Transmission Price Control review sets a restriction on SHE Transmission's charges for the General System Charge and Site Specific Charges, as described below.

2.2. Special Condition (SC) 3A of SHE Transmission's Licence established the charge restriction that determines the Allowed TO Revenue (TO_t) that SHE Transmission may earn from its TO services:

$$TO_t = BR_t + PT_t + OIP_t + NIA_t + TIRG_t + SHCP_t - K_t$$

TO_t	Allowed Transmission Owner Revenue in Relevant Year t
BR_t	Base Transmission Revenue in Relevant Year t as derived in accordance with the formula set out in Part C of SC 3A
PT_t	Allowed pass-through items revenue adjustment made in Relevant Year t as derived in accordance with SC 3B (Calculation of allowed pass-through items)
OIP_t	Outputs incentive revenue adjustment made in Relevant Year t as derived in accordance with the formula set out in Part D of SC 3A
NIA_t	Revenue adjustment made in Relevant Year t in respect of the Network Innovation Allowance as derived in accordance with SC 3H (The Network Innovation Allowance)
$TIRG_t$	Aggregate of the annual revenue allowances, for each Relevant Year t for each transmission investment project specified in Schedule C of SC 3J (Transmission Investment for Renewable Generation), as derived in accordance with that condition
$SHCP_t$	Compensatory Payments Adjustment made in Relevant Year t as derived in accordance with Part D of SC 3C (Reliability Incentive Adjustment in Respect of Energy Not Supplied)
K_t	Correction term in Relevant Year t as derived in accordance with the formula set out in Part E of SC 3A

2.3. The Allowed TO Revenue includes the costs associated with Pre Vesting connection assets and Post Vesting, Pre BETTA connection assets.

2.4. SC 2N of SHE Transmission's Licence establishes the charge restriction that determines SHE Transmission's charges for the provision of transmission services (TSH_t) to NGESO:

$$TSH_t = TO_t - EXS_t$$

TO_t	Allowed TO Revenue for Relevant Year t
TSH_t	General System Charge
EXS_t	Site Specific Connection Charges for Post Vesting, Pre BETTA sites

2.5. The methods by which these are calculated are detailed in parts one and two of this statement.

Retail Price Index (RPI)

2.6. RPI will be adjusted in accordance with the rules set out in SHE Transmission's Licence as defined in section 7 of SC 3A.

Excluded Services Charges

2.7. Part C of SC 8B of SHE Transmission's Licence establishes charging provisions for Excluded Services. These are Other Charges in addition to those specified in SC 2N (described above).

2.8. In addition to the charges arising from SHE Transmission's charges for the provision of transmission services (TSH_t) to NGESO, SHE Transmission will also invoice Excluded Services Charges monthly to NGESO.

2.9. These Excluded Services Charges are for Post BETTA connection assets; and for assets at Pre Vesting sites which have replaced time-expired assets, or have replaced non-time expired Pre Vesting assets at the User's request (i.e. as the result of a modification application). These Excluded Services Charges consist of (1) Capital charges, and (2) Transmission Operation and Maintenance charges as defined in part two.

2.10. The methods by which Other Charges are calculated are detailed in part three of this statement.

PART 1: General System Charge (TSH_t)

The General System Charge reflects the cost of installing, operating, replacing, developing and maintaining SHE Transmission's infrastructure assets and all costs associated with the replacement and/or refurbishment of Pre Vesting Transmission Connection Assets. These activities are undertaken to the standards prescribed by SHE Transmission's licence, to provide the capability to allow the flow of bulk transfers of power between connection sites and to provide transmission system security.

The General System Charge will be set to recover the Allowed TO Revenue (TO_t) for 2018-19 net of Site Specific Charges for Post Vesting, Pre BETTA connections (EXS_t).

No service provided by SHE Transmission shall be treated as an Excluded Service in so far as it relates to the provision of services remunerated under the General System Charge as set out in the STC and associated procedures. In accordance with the STC and associated procedures, SHE Transmission will invoice one twelfth of the General System Charge (which may be subject to amendment) to NGESO.

PART 2: Site Specific Charges

The Site Specific Charges are set to recover costs associated with Post Vesting connection assets specified in the TO Construction Agreement (TOCA) and/or STC for the relevant connection site. In accordance with the STC and associated procedures, SHE Transmission will invoice one twelfth of the Site Specific Charges for each connection site (which may be subject to amendment) to NGESO.

Site Specific Charges for the Post Vesting connections consist of: (1) Capital Charges and (2) Transmission Operation and Maintenance Charges. These are explained further below.

3 Capital Charges

3.1. The charge for each connection asset in year n can be derived from the general formula below:

$$\text{Annual Connection Charge}_n = D_n\,(GAV_n) + R_n\,(NAV_n) + SSF_n\,(GAV_n) + TC_n\,(GAV_n)$$

D_n	Depreciation Rate (noted as a percentage)
GAV_n	GAV for each financial year n, indexed by RPI
R_n	Real rate of return (6.65% as noted in section 3.3 below)
NAV_n	NAV of the relevant assets of financial year n
SSF_n	Site specific cost / Total site GAV (noted as a percentage)
TC_n	Transmission Running Cost component for year n

Note: when year n relates to beyond the depreciation period;

NAV_n	Is equal to 0.
D_n	Is equal to 0.

3.2. The basis of Capital Charges is outlined in this section and within section five of this statement.

Capital Charges for Post Vesting Pre BETTA Connections

3.3. For Post Vesting Pre BETTA connections commissioned before 1 April 2005 (BETTA Go-Live Date), where the capital costs are recovered through annual connection charges, these charges are based on a rate of return on the Net Asset Value (NAV) plus a depreciation charge based on an expected 40 year life. The rate of return that will be applied to the NAV is 6.65%. For connection assets where NGESO has paid 100% (full) capital contribution towards the purchase and installation of the assets, there are no annual capital charges. For partial or post commissioning capital contributions, see paragraph 3.5 below.

Capital Charges for Post BETTA Connections

3.4. For assets installed after 1 April 2005, SHE Transmission will recover the cost of connection from NGESO by means of either:

Option (a) A full capital contribution charge;

Option (b) Annual capital charge, over the lifetime of the assets; or

Option (c) A partial capital contribution charge with reduced annual charge.

3.5. Where NGESO has elected Option (a) or Option (c), SHE Transmission will require the relevant capital contribution charge to be paid either in advance of commencement of connection works (which may be phased over the construction period according to a payment schedule as set out in the TOCA) or based on the allocated and depreciated NAV of a commissioned asset.

3.6. NGESO could elect to make a capital contribution based on the allocated and depreciated NAV of a commissioned asset or while the asset is under construction (after the commencement of construction but prior to the commissioning date). For a capital contribution to take account at the start of the charging year n, NGESO may, at most once per year, make a full or partial capital contribution of at least 10% of the NAV (or GAV for an asset under construction) prevailing as of 31 March in year n-1. NGESO shall notify SHE Transmission of the capital contribution amount no later than 1 October in year n-1, and pay the capital contribution 45 days prior to the start of the charging year n, which will be applied to the NAV prevailing at the start of year n.

3.7. For Option (a) where NGESO has requested and paid full capital contribution there will be no annual capital connection charges (i.e. no depreciation and rate of return charges).

3.8. For Option (a) the sum quoted in the construction agreement for the connection assets at the relevant site will become the GAV of the connection assets for the purposes of calculating the annual Transmission Operation and Maintenance Charges for the site.

3.9. For Option (c) where NGESO has requested and paid partial capital contribution, either pre or post asset commissioning, the annual capital connection charge will recover the remaining capital cost. The annual capital connection charge will become payable the day after commissioning of the connection assets or from the day the connection assets become available for use.

3.10. Where NGESO has elected Option (b) or (c) the capital costs recovered through annual charges are based on a rate of return on the NAV plus a depreciation charge based on the asset life. The standard life per the CUSC for a connection offer is 40 years. The rate of return that will be applied to the NAV is 6.65%. The depreciation period for Post BETTA connection assets may, by mutual agreement, be less than 40 years but never more than 40 years.

Connection Agreements

3.11. SHE Transmission's connection offer to NGESO will be based on one of the following price bases and payment terms will reflect Option (a), (b) or (c) above.

(i) Fixed Price Agreement

3.11.1. Upon receipt of NGESO's formal application for a connection, SHE Transmission will submit a fixed price offer within three months of the effective application date. The fixed price offer option is available for a connection application where the planned connection completion date is generally within 18 months from the offer date. Typically with this option the charges to be incurred, and any indexation, are agreed between SHE Transmission and NGESO and connection charges are not recalculated once outturn costs are known. A fixed price agreement may include a risk margin to allow for possible variances above the estimate, which might occur for any reason.

(ii) Indicative Price Agreement

3.11.2. Upon receipt of NGESO's formal application for a connection, SHE Transmission will submit an indicative price offer within three months of the effective application date. When SHE Transmission has obtained sufficient information to determine the price, SHE Transmission will confirm or amend the indicative price to a fixed price. This will be at least six months prior to date of commencement of any works (as stated in the indicative offer). The indicative price offer will, in practice, only become a fixed price offer when SHE Transmission is in a position to forecast with reasonable accuracy what the total costs of the project will actually be. This may be, for example, when the scope of works has been finalised and prices from sub-contractors have been obtained.

(iii) Indicative Price Agreement with Outturn Price Reconciliation

3.11.3. Once the works required to provide a new or modified connection are completed and the costs finalised, the connection scheme is "outturned". SHE Transmission reconciles the monies paid by NGESO on the indicative charge basis against the charges that would have been payable based upon the actual costs incurred in delivering the project along with any relevant interest charges. This process requires a new charging GAV (the initial asset cost) to be agreed with NGESO in line with the "Calculation of the Gross Asset Value" (as shown in section five).

3.12. NGESO will indicate in its formal application for a connection to SHE Transmission which price agreement and payment Option ((a), (b) or (c)) it requires.

3.13. SHE Transmission reserves the right to make an offer of terms on a different price basis if SHE Transmission is aware that the choice exercised by NGESO is not the same choice being exercised by the party requesting the connection ("the User") in its relationship with NGESO.

3.14. Where SHE Transmission installs assets of greater size and/or capacity than the minimum that would be required for that connection using standard equipment ratings, the costs in excess of that minimum normally shall be borne by SHE Transmission.

3.15. If SHE Transmission considers that assets require to be replaced prior to the end of their normal economic lifetime (normally 40 years), the replacement costs will be borne by SHE Transmission within the remaining economic life of the original assets. On expiry of the expected lifetime of the original assets, the connection capital charge will be recalculated, taking account of the NAV of the replacement connection assets, together with the normal provision for depreciation.

3.16. Pre Vesting sites will be charged in accordance with this charging statement and the CUSC.

3.17. Where a modification to the existing connection occurs at NGESO's request or due to developments to the transmission system, the connection charges will reflect any additional connection assets that

are necessary to meet NGESO's requirements. Charges will continue to be levied for existing assets that remain in service. Termination charges, as described in section fifteen, will be charged for any existing connection assets made redundant as a result of the modification.

4 Transmission Operation and Maintenance Charges

4.1. Transmission Operation and Maintenance Site Specific Charges in respect of connections provided by SHE Transmission are not limited to the routine maintenance of assets in accordance with specified maintenance frequencies, but also include the following:

- a proportion of the cost of operating the transmission business;
- total site care, covering site safety, security and environmental protection, local liaison, notably with statutory authorities, wayleave grantors and members of the public;
- payment of local authority charges, electricity, water and telephone charges associated with the connection site; and
- standby and out-of-hours service throughout the year.

4.2. For Options (a), (b) or (c) (section three above) as relevant and for Post Vesting Pre BETTA connections, the Transmission Operation and Maintenance annual charges will be calculated as set out below.

4.3. Transmission Operation and Maintenance annual charges are divided into two parts:

- Site Specific Maintenance Charge

4.3.1. The Site Specific Maintenance annual charge recovers the on-going maintenance (including repairs) of the connection asset and is based on forecast total site specific maintenance for National Electricity Transmission System Security (NETS) divided by the total GAV of SHE Transmission's connection assets to arrive at a percentage of total GAV. The annual Site Specific Maintenance charge is 0.5% of the connection asset GAV. For the avoidance of doubt, there will be no reconciliation of the Site Specific Maintenance charge.

- Transmission Running Cost Charge

4.3.2. The Transmission Running Cost (TRC) charge is calculated each year to reflect the appropriate amount of other transmission operation costs (rates, operation, indirect overheads) incurred by SHE Transmission that should be attributed to connection assets. This charge is based on a percentage of the GAV of the connection asset. The TRC is 1.5% of GAV. For the avoidance of doubt, there will be no reconciliation of the TRC.

5 Calculation of Gross Asset Value (GAV) and Net Asset Value (NAV)

5.1. The GAV represents the initial total cost of a connection asset to SHE Transmission. For a new connection asset it will be the costs incurred by SHE Transmission in the provision of that connection asset, as defined in the TOCA. Typically the GAV is made up of the following components:

- Construction costs – costs of materials and bought in services;

- SHE Transmission engineering – allocated equipment and engineering costs including overheads;
- Interest during construction – financing cost; and
- Liquidated damages premiums – premiums required to cover Liquidated Damages, if applicable.

5.2. The GAV of an asset is re-valued each year using RPI as as defined in SC 3A as noted in paragraph 2.6 of this document. The formula for this revaluation is therefore as follows:

$$GAV_n = GAV_{n-1} * RPI_n$$

5.3. RPI will be adjusted in accordance with the rules set out in SHE Transmission's licence as defined in SC 3A.

5.4. The NAV of each asset for year n, used for charge calculation, is the average (mid year) depreciated GAV of the asset. The following formula calculates the NAV of an asset, where A_n is the age of the asset (number of completed charging years old) in year n:

$$NAV_n = GAV_n * [Depreciation\ Period - (A_n + 0.5) / Depreciation\ Period]$$

Note: when year n relates to beyond the depreciation period;

NAV_n Is equal to 0.

PART 3: Other Charges

Over and above the General System Charge and Site Specific Charges, SHE Transmission may incur other costs, including, but not limited to:

- costs associated with processing applications for connection to the system;
- one-off costs associated with new connections; and
- cost of rearranging outages at NGESO's request.

Any costs incurred by SHE Transmission as a result of NGESO's requirements that are not otherwise recoverable through the General System Charge or Site Specific Charges will be charged to NGESO according to the following principles.

6 Application Fees

6.1. SHE Transmission will charge NGESO an application fee at the time of each application for a new or modified connection to SHE Transmission's transmission system. This fee is intended to cover engineering costs and other expenses involved in preparing an offer of terms.

6.2. NGESO can opt to pay a fixed price application fee in respect of their application, apart from Offshore applications, or pay a variable application fee, which is based on the actual costs incurred. The fixed price fees for applications are detailed in Appendix B.

6.3. If NGESO chooses to pay a variable application fee, SHE Transmission will charge NGESO the fixed price fee in the appropriate table detailed in Appendix B and carry out reconciliation once the actual engineering and out-of pocket expenses have been established. Actual costs will be based on the SHE Transmission charge-out rates detailed in Appendix C. Where actual costs exceed the advance, SHE Transmission will issue an invoice for the excess. Conversely, where SHE Transmission does not use the whole of the advance, the balance will be refunded.

6.4. Should NGESO notify SHE Transmission of changes in the planning assumptions after receipt of an application fee, SHE Transmission may levy an additional charge.

6.5. In exceptional circumstances where NGESO has requested an application which involves significant costs over and above that normally expected (e.g. substantial system studies, specialist surveys, investigations) to process an offer of terms then SHE Transmission reserves the right to vary the applicable fixed fee quoted in Table A or B of Appendix B. Under these circumstances, SHE Transmission will, following discussion with NGESO, advise the appropriate indicative applicable fee. Such an application fee will be treated as a variable application fee, and reconciled in the manner detailed above once the actual costs are known.

6.6. Upon receipt of invoice, SHE Transmission will refund application fees and consent payments either on commissioning or against the charges payable in the first three years of the new or modified agreement. The following conditions apply:

- The refund will be net of external costs;

- Where a new or modified agreement is signed and subsequently modified at NGESO's request before any charges become payable, SHE Transmission will refund the original application fee. SHE Transmission will not refund fees in respect of the subsequent modification; and

- SHE Transmission will not refund application fees for applications to modify a new agreement or modified existing agreement at NGESO's request before any charges become payable.

7 Feasibility Studies

7.1. If NGESO requests a feasibility study in conjunction with alterations to or extension of the SHE Transmission network, a fee is payable based on an advance of SHE Transmission engineering and out-of pocket expenses. The fee payable by NGESO will vary according to the size of the study and the amount of work involved. Where actual engineering and out-of pocket expenses exceed the advance, SHE Transmission will issue an invoice for the excess. Conversely, where SHE Transmission does not use all of the advance, the balance will be refunded.

7.2. A schedule of charge-out rates for different grades of SHE Transmission staff is attached at Appendix C.

8 One-Off Works

8.1. To provide or modify a connection, SHE Transmission may need to carry out works on the transmission system that, although directly attributable to the connection, may not give rise to additional connection assets. These works are defined as "one-offs". Liability for one-off works charges is established with reference to the principles laid out below:

- Where a cost cannot be capitalised into either a connection or infrastructure asset, typically a revenue cost;

- Where a non-standard incremental cost is incurred as a result of NGESO's request, irrespective of whether the cost can be capitalised; and

- Where there is a termination charge associated with the write-off of connection assets at the connection site.

8.2. The one-off works charge is a charge equal to the cost of the works involved, plus a reasonable return.

8.3. The calculation of the one-off works charge for write-off of assets is outlined below:

Write-off Charge = 100% of remaining NAV of redundant assets

8.4. The costs of diversion of transmission lines or cables, in conjunction with an application for a new or modified connection, including removal or relocation of towers will be recovered as one-off works charges.

8.5. The costs of Category 1 and 3 inter-tripping schemes for generator connections (as defined in the Grid Code and the CUSC) will be recovered as one-off works charges.

8.6. The costs of abortive transmission construction works will be recovered as one-off works charges as set out in this statement.

8.7. One-off works charges are payable prior to the connection date or, where agreed, upon alteration or completion of the works and are paid on an agreed date.

9 Miscellaneous Site Specific Charges

9.1. Other contract specific charges may be payable by NGESO for a specific site. These will be set out in the TOCA and/or STC where appropriate.

10 Abortive Works

10.1. Following a User's modification application if, in SHE Transmission's reasonable opinion, the User has required SHE Transmission to make the amendment to the transmission construction works and SHE Transmission has previously carried out transmission construction works, some or all of which are now no longer required ("Abortive Works"), NGESO shall be required to make a payment to SHE Transmission in respect of all fees, expenses and costs, of whatever nature, reasonably and properly incurred by SHE Transmission in respect of the Abortive Works.

11 Contestable Connection Works

11.1. The above principles are relevant for transmission connections where SHE Transmission procures and installs all necessary transmission connection assets on behalf of the User. However, it is also possible for the User themselves to procure and install certain transmission connection assets as contestable connection works. Such arrangements would be subject to the assets being designed and installed to SHE Transmission's technical standards to ensure the ongoing security and operability of the transmission system. SHE Transmission may also require other agreements and indemnities to mitigate any adverse consequences for other Users of the transmission system that may arise as a result of a User's decision to "self -build".

11.2. We advise that SHE Transmission's self-build arrangements are under development and are subject to modification to reflect the requirements of a particular self-build scheme. In the event a User should wish to consider the option of self–building certain transmission connection assets and works, they should advise NGESO of this intention when making their formal application to NGESO. Following such indication of intent SHE Transmission will provide the User with the necessary specifications and agreements covering the self-build works.

11.3. SHE Transmission would adopt the User's self-build transmission connection assets, free of charge, subject to the User complying with the requirements and obligations of a Transmission Adoption Agreement ("TAA") in respect of the transmission connection assets and other requirements. The TAA shall be between SHE Transmission and the User.

11.4. The TO construction agreement would contain an estimated GAV for the new or replacement connection assets for charging purposes. The GAV would be estimated by SHE Transmission as though it was carrying out the full works.

12 Energy Metering Systems

12.1 The charges to NGESO for the provision of energy metering systems will be on a similar basis as other SHE Transmission connection assets. The electronic component of the energy metering system have a 10 year replacement and depreciation period whilst the non-electronic components retain a 40 year replacement and depreciation period.

13 Outage Services

13.1 Where pre-arranged outages are re-arranged at NGESO's request or where NGESO require additional services for planned or unplanned outages over and above the normal service provided under General System Charge, NGESO will be liable for outage service charges. These charges reflect the costs incurred by SHE Transmission in accommodating NGESO's request. They include, but are not limited to:

- Costs of standing down contractors until outage starts. Costs will be derived from contractors' invoices and, in the case of liquidated damages, from the relevant agreement(s);
- Costs of overtime working to reduce outage time such as to reduce NGESO's costs in maintaining system security. Costs will be based on overtime hours worked on the particular outage;
- Costs of installing additional equipment, such as bypass arrangements; and
- Knock on costs which are incurred by other agreed outages which are directly attributable to the change requested by NGESO.

13.2 Where an outage is re-arranged at NGESO's request, SHE Transmission will use all reasonable endeavours to minimise the charge to NGESO by redeploying staff onto other work.

13.3 Charge-out rates to assess indicative costs for overtimeare given at Appendix C.

14 De-energisation and Disconnection

14.1. Where NGESO wishes a supply to be permanently de-energised, a minimum of two business days notice (or such other period as may be specified in the TOCA and/or STC) to that effect should be given to SHE Transmission. SHE Transmission will arrange to de-energise the supply and read the metering equipment, where appropriate, for billing purposes. An additional charge will be made for this service if undertaken outside normal working hours.

14.2. Temporary de-energisation (and subsequent re-energisation) resulting from the failure by NGESO to comply with the terms of the relevant TOCA agreement, or carried out at the request of NGESO will be at the expense of NGESO.

14.3. Where it becomes necessary to disconnect a customer (at the request of NGESO), that is to have SHE Transmission's equipment removed from site, for any reason, any payments outstanding in first providing that connection will become due forthwith.

14.4. If NGESO requests disconnection, this should be requested in writing. On receipt of such a request SHE Transmission will take all reasonable steps to remove the equipment in accordance with NGESO's reasonable requirements. SHE Transmission should be consulted at an early stage and a programme for the removal of equipment will be subject to individual assessment.

14.5. On termination, SHE Transmission retains the right to remove its equipment. Where it is cost effective to do so, SHE Transmission will remove such equipment and no charge will be made to NGESO.

14.6. For those assets where removal is not cost effective (e.g. buried cables), SHE Transmission will ensure such assets are made safe and that conditions allow them to be left on site. If NGESO, or general planning conditions, require SHE Transmission to remove the assets, the cost of removal will be payable by NGESO. All such equipment will remain the property of SHE Transmission until otherwise agreed in writing with SHE Transmission.

15 Termination Charges

15.1. Where NGESO decides prior to the expiry of the normal 40 year replacement period of the assets involved, that all or part of a connection is no longer required and either applies to modify the agreement, or serves notice of a termination, a termination amount is payable to SHE Transmission, except where the full capital charge has been paid in advance, excluding reasonable costs of removing such assets. The termination charge is calculated on the basis of the NAV of the assets involved, with due allowance for any financing contribution made by NGESO plus all reasonable costs associated with removal of the assets.

15.2. Where the connection assets are made redundant as a result of the termination or modification to the TOCA and/or STC, NGESO will be liable to pay an amount equal to the NAV of such assets as at the end of the financial year in which termination or modification occurs, reflecting the following:

- The reasonable costs of removing such assets. These costs being inclusive of the costs of making good the condition of the connection site;
- The connection charge for the full year, if a connection asset is terminated before the end of a financial year;
- The reasonable costs incurred by SHE Transmission in connection with the installation of assets which meet the following criteria: assets which SHE Transmission has determined to replace upon the expiry of the relevant replacement period, in accordance with the provisions set out in the STC, and for which a notice to disconnect or terminate has been served in respect of the connection site at which the assets were located. Installation costs are payable due to the timing of the replacement of such assets, as no Site Specific Charges will have become payable in respect of such assets by NGESO by the date of termination;
- Where termination occurs mid way through the financial year, no Site Specific Maintenance Charges (4.3.1) or Transmission Running Cost Charges (4.3.2) will be charged for the final period.
- Previous capital contributions will be taken into account.

15.3. The calculation of termination charge for financial year n is as follows:

$$\text{Termination charge}_n = UoS_n + C_n + NAV_{an} + R - CC$$

UoS_n	Outstanding Use of System Charge for year (TNUoS and BSUoS)
C_n	Outstanding Connection Charge for year
NAV_{an}	NAV of the relevant assets as at 31 March of financial year n
R	Reasonable costs of removal of redundant assets and making good
CC	An allowance for previously paid capital contributions

15.4. Examples of reasonable costs of removal for terminated assets and making good the condition of the site include the following:

- If SHE Transmission terminates a circuit breaker as a result of a User leaving a site, this may require modifications to the protection systems;
- If an asset were terminated and its associated civils had been removed to 1m below ground then the levels would have to be made up. This is a common condition of planning consent.

16 Re-use of Connection Assets

16.1. If any assets in respect of which a termination charge was made to SHE Transmission are re-used at the same site or elsewhere on the system, including as infrastructure assets, SHE Transmission will make a payment to NGESO to reflect the fact that the assets are being re-used.

16.2. The arrangements for such repayments for re-use of assets are that SHE Transmission will pay NGESO a sum equal to the lower of:

- The Termination Amount paid in respect of such assets; or
- The NAV attributed to such assets for charging purposes upon their re-use.

16.3. The above payments are less any reasonable costs incurred in respect of the storage of re-used assets.

16.4. The definition of re-use is set out in the CUSC.

16.5. Where SHE Transmission decides to dispose of a terminated asset and it is capable of re-use, SHE Transmission will pay NGESO an appropriate proportion of the sale proceeds received.

17 Early Termination of Transmission Reinforcement Works

17.1. When a TOCA for a connection is terminated by NGESO prior to completion of the works then, in addition to the costs incurred at the time of termination for connection assets, NGESO must pay SHE Transmission the costs incurred at the time of termination for any transmission reinforcement works which were required as a direct consequence of NGESO's application for a connection.

18 Early Replacement

18.1. If SHE Transmission considers that a connection asset requires to be replaced prior to the end of its standard economic life, the replacement costs will be borne by SHE Transmission within the remaining economic life of the original connection asset. On expiry of the expected life of the original connection asset, the connection charge will be recalculated taking account of the NAV of the replacement connection asset, together with the normal provision for depreciation.

19 Miscellaneous

19.1. If NGESO request any other work by SHE Transmission which is not covered by the General System Charge, Site Specific Charges or other charges specified above, SHE Transmission will provide terms for the requested work.

GLOSSARY

Affected TO	A TO who owns or operates a transmission system which is electrically impacted by a User's connection to a Host TO's transmission system
Allowed TO Revenue	As set out in the TO's Transmission Licence
Authority	The Gas and Electricity Markets Authority (GEMA)
BETTA	British Electricity Trading and Transmission Arrangements
BETTA Go-Live Date	1 April 2005
Bilateral Connection Agreement	An agreement between the SO and the User covering the connection to SHE Transmission's transmission system
Consents	In relation to any transmission system and/or connection works: a) all such planning (including Public Inquiry) and other statutory consents; b) all wayleaves, easements, rights over or interests in land or any other consent; or for commencement and carrying on of any activity proposed to be undertaken at or from such works when completed; and c) permission of any kind as shall be necessary for the construction of the works
CUSC	Connection and Use of System Code
Entry	A point of connection at which electricity may be exported from a User's installation onto the transmission system i.e Generation
Excluded Services Charges	As defined in Special Condition 8B of the TO's Transmission Licence
Exit	A point of connection at which electricity may flow from the transmission system to the User's installation i.e. Demand
Host TO	The TO which will electrically connect the User to a transmission system which is owned or operated by that TO
NGESO	National Grid Electricity System Operator plc
Post BETTA	On and after 1 April 2005
Post Vesting	1 April 1990 to 31 March 2005
Retail Price Index	Published by the Office for National Statistics and amended monthly (Table 36: RPI: All items index 1947 – date "CHAW"). Calculated in accordance with SC 3A.

SO	System Operator (NGESO)
STC	System Operator Transmission Owner Code
TO	An onshore or offshore Transmission Owner (SHE Transmission)
Transmission Interface Point	The electrical point of connection between the offshore transmission system and onshore transmission system
Transmission Interface Site	The site at which the Transmission Interface Point is located
Transmission Licence	Transmission licence granted or treated as granted under section 6(1)(b) of the Electricity Act (1989)
Transmission Voltage	In Scotland, usually voltages at 132kV or above
User	A generation or demand customer connected to the TO's transmission system and party to SO bilateral agreement(s)

Appendix A Indicative Connection Asset Charges

The schedule below gives typical costs, excluding Value Added Tax (VAT), for additions to SHE Transmission's transmission system. The costs shown are current at the time of publication, are subject to change without notice and may vary upon system configuration, consents, site conditions etc.

Description	£000s		
	275kV	132kV	33kV
Single Busbar Bay	1,432	1,190	226
Double Busbar Bay	1,537	1,328	231
Single Circuit Trident £/km	-	407	-
Double circuit Steel Tower £/km	1,646	1,245	-
Transformer Cables per km (inc terminations)	2,597	1,129	-
275/132kV 240MVA Transformer	6,419	-	-
275/33kV 120MVA Transformer	3,869	-	-
132/33kV 90MVA Transformer	-	2,706	-
132/33kV 60 MVA Transformer	-	2,548	-

Calculation of Gross Asset Value (GAV)

The GAV figures in the above table were calculated using the following assumptions:

- Each asset is new;
- The GAV includes estimated costs of construction, engineering and liquidated damages premiums.

Notes on Assets

Busbar Bays – Assumptions:

- Plant – the bay is constructed from SHE Transmission standard bay drawings; tendered prices provided for protection, cabling, auxiliary systems, earthing are based on various assumptions;
- Everything is based on an assumed value per bay;
- Civil – nominal base sizes and dimensions of concrete footings, good ground condition, including landscaping. Access works and drainage costs elsewhere.

Busbar Bays – Exclusions:

- Plant – overall substation protection, main control and Supervisory Control and Data Acquisition (SCADA) systems;
- Auxiliary supplies including Low Voltage (LV) Alternate Current (AC) and Direct Current (DC) systems;
- Electrical design costs;
- Local authority/statutory planning consents.

Transformer Cables – Assumptions (All based on 1 circuit of 1 core per phase, 1000m circuit length on a flat and unimpeded route):

- Cross-Linked Polyethylene (XLPE) lead/ali sheathed cable supply, install, commission;
- High voltage AC and sheath testing;
- Earth Continuity Cable (ECC) & link boxed supply, installation and connection included;
- Fibre optic including terminal boxes – installed with cable only;
- Cable installed in ducts/trenching;
- Connection and modifications to earth mat;
- Excavation waste disposal, site establishment/prelims, security and access costs included;
- Cable installation will be treated as a standalone installation project;
- Costs do not allow for any small quantity/Minimum Order Quantity (MOQ) surcharge that may be levied by the cable supplier.
- Others – VAT and inflation.

Transformers – Assumptions:

- Plant – costs include for procurement, delivery and commissioning of Grid and Super Grid (SG) transformers;
- Civil – nominal base sizes with good ground conditions, include for a bund. Access, oil containment;
- Transformer protection, control, cabling, auxiliary systems varies based on site specifications and requirements;
- Earthing is based on an assumed value per bay.

Transformers – Exclusions:

- HV & LV switchgear;

- Bay protection, control and SCADA system (considered under part of the busbar bay costs);
- Auxiliary supplies including LV AC & DC systems;
- Civil – piling;
- Site drainage;
- Electrical design costs;
- Fire protection systems;
- Local authority/statutory planning consents;
- Other – VAT and Inflation.

Factors Which Can Influence Costs and Charges:

- Standards governing the system;
- Special security of supply requirements;
- Length of cable/line required from existing system;
- Size of Exit point / Entry point capacity requirements in relation to available capacity of existing network, including the age of the assets and the condition of the network;
- Whether any extension or reinforcement of the existing network is by underground cable or overhead lines;
- Type of ground requiring excavation; type and extent of reinstatement necessary, including New Roads and Street Works Act requirements; need for road crossings;
- Availability of wayleaves/easements for cables and lines including any planning consents;
- Availability of suitable substation sites including any necessary planning consents;
- Necessity of overtime working.

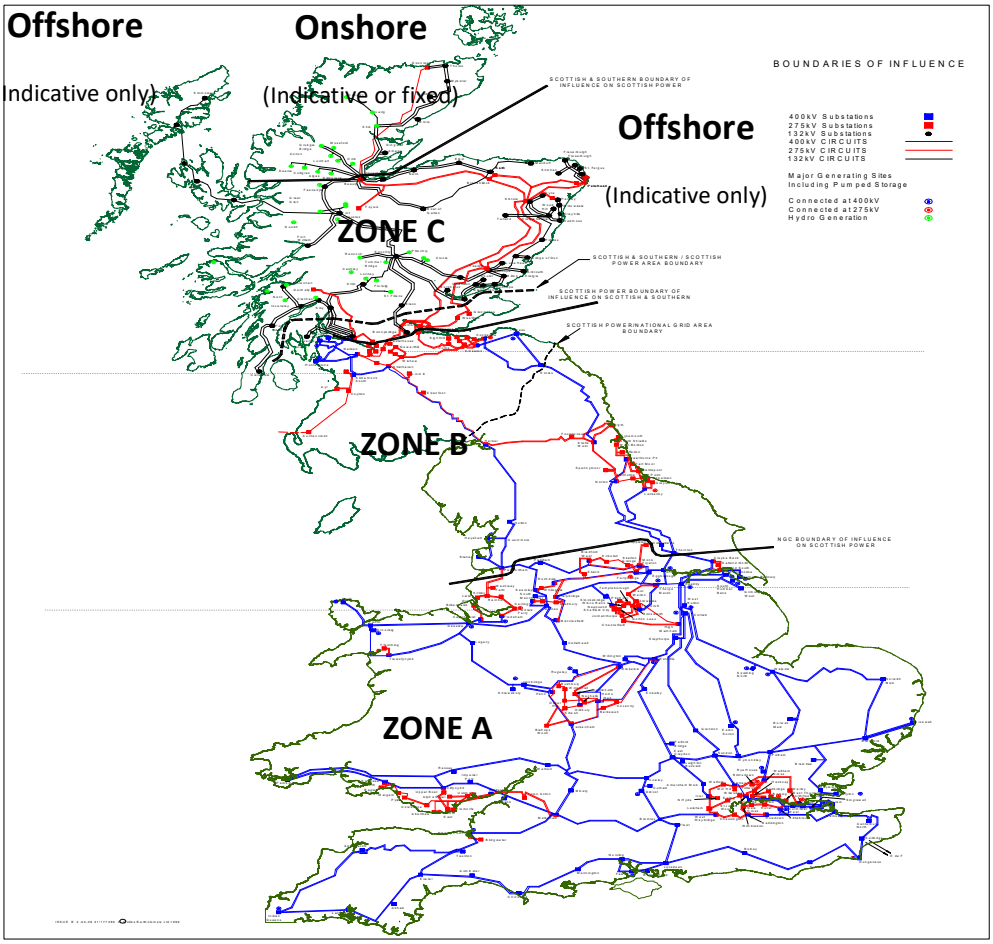
Illustrative list of Abnormal Services which may be reflected in the Site Specific Charges:

Illustrative list of abnormal services which may be reflected in the connection charge:

- progression of work required other than in an orderly fashion in accordance with normal engineering policies and practices thus imposing additional costs;
- transformer/substation sites not provided to the Company in suitable locations at normal prices or rents, taking account both of cable access and access by personnel;
- loads with abnormal characteristics, which affect the security and standard of service on the system, for example, arc welders and large motors.

Appendix B Application Fees

Transmission Licensees' Boundaries of Influence Map



Application fees will be applied depending on which zone the connection will be constructed within. See Tables A and B on pages 25 and 26. The boundaries of influence are set out in detail in the NGESO's Electricity Ten Year Statement.

All Fees are subject to other additional costs covering any other special design requirements e.g. subsea survey, advance wayleaving etc being payable or underwritten by NGESO.

All fees are subject to the addition of VAT.

No application fee is payable for SHE Transmission initiated works.

The megawatt (MW) value is the final value applied for.

Table A – Application Fees in Zone C, where SHE Transmission is Host TO

Application Type	MW	Base Fee (£)	Rate (£/MW)
New Onshore Application (Entry)	<100 100 – 1320 >1320	26,000 41,000 119,000	189 92 40
New Onshore Supply Point (Exit)	<100 =>100	25,000 50,000	N/A -
New Offshore Application (Indicative Only)	-	35,000	N/A
Statement of Works (1) (Entry)	-	500	N/A
Modification Application (2) following Statement of Works (Project Progression)	-	4,500	N/A
Non Firm Statement of works	N/A	10,000	N/A
TEC Increase	<100 100 – 1320 >1320	26,000 41,000 119,000	189 92 40
Application Type	**MW**	**Base Fee (£)**	**Factor**
Onshore Modification Application (Entry)	<100 100 – 1320 >1320	26,000 41,000 119,000	0.75
Onshore Modification Application to Existing Supply Point (Exit)	<100 =>100	9,000 18,000	N/A
Offshore Modification Application (Entry)	<100 100 – 1320 >1320	26,000 41,000 119,000	0.75
Embedded Generation Application (1) (Entry)	<100	26,000	0.3

	100 – 1320 >1320	41,000 119,000	
TEC increase for embedded generation (Entry)	<100 100 – 1320 >1320	26,000 41,000 119,000	0.2
Embedded Modification Generation Application (1) (Entry)	<100 100 – 1320 >1320	26,000 41,000 119,000	1.5

Table B – Application Fees in Zone C, where SHE Transmission is Affected TO

Application Type	MW	Base Fee (£)	Rate £/MW
New Onshore Application (Entry)	<100 100 – 1320 >1320	7,000 11,000 31,000	49 23 9
New Onshore Supply Point (Exit)	<100 =>100	12,500 25,000	- -
New Offshore Application (Indicative Only)	-	35,000	N/A
Statement of Works (1) (Entry)	-	500	N/A
Modification Application (2) following Statement of Works (Project Progression)	-	4,500	N/A
Non Firm Statement of Works	N/A	10,000	N/A
TEC Increase	<100 100 – 1320 >1320	7,000 11,000 31,000	49 23 9

Application Type	MW	Base Fee (£)	Factor
Onshore Modification Application (Entry)	<100 100 – 1320 >1320	7,000 11,000 31,000	0.75
Onshore Modification Application to Existing Supply Point (Exit)	<100 =>100	9,000 18,000	N/A
Offshore Modification Application (Entry)	<100 100 – 1320 >1320	7,000 11,000 31,000	0.75
Embedded Generation Application (1) (Entry)	<100	7,000	0.3

	100 – 1320 >1320	11,000 31,000	
TEC increase for embedded generation (Entry)	<100 100 – 1320 >1320	7,000 11,000 31,000	0.2
Embedded Modification Generation Application (1) (Entry)	<100 100 – 1320 >1320	7,000 11,000 31,000	1.5

Notes for Tables A and B:

Application fees are calculated for the relevant Application Group on the following basis:

New Onshore Application	= Base Fee + (MW * Rate)
TEC Increase	= Base Fee + (MW * Rate)
New Offshore Application	= Number of offshore connection sites * Base Fee
Onshore Modification Application	= Base Fee * Factor
Offshore Modification Application	= Base Fee * Number of Transmission Interface Sites * Factor
Embedded Generation Application	= Base Fee * Factor
Embedded Generation Modification App	= Base Fee * Factor

Notes:

1. In response to any Statement of Works request, SHE Transmission will provide a Statement of Works response which will inform whether there are any transmission system works required. No formal terms of offer will be provided.

2. In the event the Statement of Works response provided by SHE Transmission to NGESO shows that the transmission works are required by the embedded distribution connection, NGESO will be required to submit a formal Modification Application.

    - For both in area and out of area offers where SHE Transmission is the Host TO / Affected TO respectively, and where no significant network assessment is required the fee applicable for this Modification Application is £2,300. Where significant network assessment is required the applicable fee for this Modification Application is £10,000.

Appendix C Charge-Out Rates

Grade	Rate (£/day)
Section Manager or Internal Solicitor	990
Principal Power Systems Engineer	833
Senior Power Systems Engineer, Project Manager or Senior Wayleave Officer	695
PS Engineer or Draughtsman	554
Graduate Engineer	468
Craftsman (linesman, cable jointer, substation fitter)	419
Admin support	366

All fees are subject to the addition of VAT.