nationalgrid

Introduction to Final Generator Payments

Information I **National Grid**

Last Updated 12/15

How are generators charged for TNUoS?

TNUoS (Transmission Network Use of System) charges recover the costs of all Transmission Owners (TOs) in building and maintaining an efficient transmission network.

A 'wider' charge is paid by generators, plus a substation charge and a possible charge for local circuits.

Wider charges

From 1st April 2016 a generator will be charged TNUoS based on the formula shown in Fig.1.

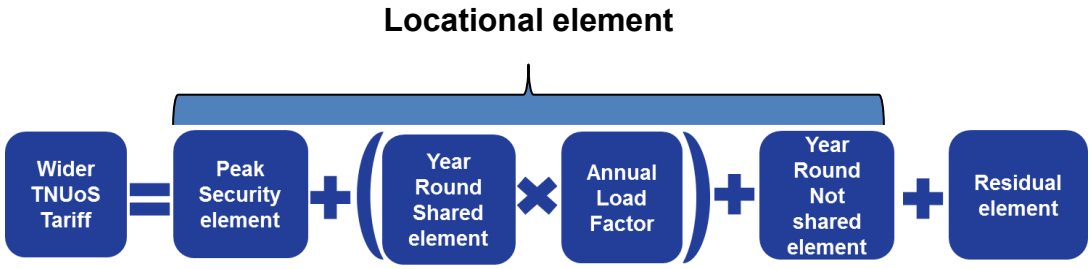

Fig.1 - Formula from April 2016 for derivation of wider TNUoS tariff for generators

The wider TNUoS tariff includes a **locational element** which provides a forward looking price signal reflecting the cost of transmission investment due to connection in a particular geographical area. There are 27 'generation charging zones' currently and each will have a respective locational tariff.

The **locational element of TNUoS is further divided into three components** to recognise the changing drivers of transmission investment, namely;

- A **peak security element** signalling the forward looking cost of a generator's impact on transmission investment to secure peak demand. **Intermittent generators such as wind farms are not liable for this tariff element** as the SQSS currently assumes they do not drive investment to secure peak demand. The SQSS may change this assumption and if so we will review its applicability in calculating TNUoS charges will be reviewed.
- A **year round element** signalling the forward looking cost of a generator's impact on transmission investment on a year round economic basis. This element is a transparent, simple, objective charging base (proxy) for generators reflecting their specific impact on this element of transmission investment. This element implicitly includes the economic impact of a generator's running over peak periods. **All generators are liable for this proportion which is further subdivided into;**

- A **shared element** reflecting the reduced level of investment that will be required in those parts of the system with a broad mix of generation technologies whose output will complement each other (i.e. they will 'share' transmission). This element is **multiplied by the specific annual load factor of a generator** reflecting that generator's impact on investment requirements. An annual load factor of a generator is based on historical output over the last 5 years, and looks at how often a generator uses the transmission network. It will range between 0.0 and 1.0. Where there is not enough data available to derive a specific annual load factor for a generator, generic ALFs by generation type will be used. Further information on ALFs can be found here.
- **A not shared element** reflecting the higher level of investment that will be required in those parts of the system dominated by low carbon generation (e.g. wind). This is because low carbon generation has a high coincidence of operation and its curtailment will incur higher operational costs, leading to a higher level of required investment. This element is *not* multiplied by a generator's ALF. This element is some time referred to as 'diversity' – not shared means no diversity. In effect it charges users based on capacity rather than capacity multiplied by annual load factor.

The flat **residual element** ensures correct revenue recovery for Transmission Owners. Whilst the locational element provides a signal it does not aim to recover the total cost of transmission. The residual element can be considered as a flat charge that all generators are liable for. It should be noted that due to current EU regulation, the average annual generation charges in GB are 'capped' at €2.5 / MWh. This means that the residual element of generation charges is anticipated to become negative from c.2017 onwards to ensure the cap is not breached.

These four elements of the wider TNUoS tariff are summed to obtain the wider TNUoS tariff for that generator as shown in Fig.2. This is then *multiplied by a generator's Transmission Entry capacity (TEC)* to derive its annual wider charge.

Local circuit and substation charges

In addition to a wider tariff, generators may also pay local circuit charges to reflect the cost of the transmission network between their connection and their nearest MITS (Main interconnected transmission system) node. A MITS node is defined as a Grid Supply Point connection with 2+ transmission circuits connecting at the site, *or* a node with more than 4 transmission circuits connecting at the site.

The substation tariff reflects the cost of the first substation that a generator connects to. The cost of this charge will depend on the rating of the substation, the voltage of the substation and whether the substation has any 'redundancy' (this depends on the design of the substation i.e. the number of busbars in a substation).

Both local circuit charges and substation charges are charged according to a generator's Transmission Entry Capacity (TEC). Generators are liable for TNUoS on an annual basis at to a level up to their TEC for that year. In return they receive the financially firm right to access the transmission system to a level up to their TEC in that year.

Annex 1: Worked example using the July forecast of 16/17 TNUoS charges published in July 2015.

Type of charge	Calculated example
Wider charge - Locational element	A map of generation zones can be found in appendix E of the report. So for example if a generator connected to Dounreary this would fall in zone 1 (North Scotland). Generation tariff forecasts for each generation zone can be found on page 5. For the example of a wind farm with an annual load factor* of 30%, connected to the MITS in zone 1 (first row of the table on page 5, final charge displayed in last right hand cell): • Pays no peak element (as a wind farm is not a conventional generator) • Pays Shared element scaled by annual load factor = 0.3* x £10.02/kW = **£3.01/kW** **(Example annual load factor of 0.3 used here for illustration)* • Not shared element **£6.73Kw** • Residual element: **£0.21/kW** **Total forecast wider charge = £3.00+£6.73+£0.21 = £9.95/kW**
Local circuit charge	Forecast local circuit charges can be found on p6 of the report e.g. Kilmorack is £0.18/kW
Local substation charge	Forecast local substation charges for 16/17 can be found on page 5 of the report. For example, a substation with 2 busbars (i.e. with redundancy) at 132Kv and rated at 180MW would pay £0.40/kW
TOTAL TNUoS CHARGE:	Sum all the charges above: £9.95 + £0.18 + £0.40 = £10.53/kW If TEC is, for example 200MW, then x this by 1,000 to get to kilowatts. Final TNUoS charge is: 200 x 1,000 x £10.52 = **£2.104m per year**

Table 1: This is an example for illustration only and uses forecast and not final tariffs.

Disclaimer

In the event of any inconsistencies between this guidance note and the CUSC, the NGC Use of System Charging Methodology or the BSC, then the CUSC, the NGC Use of System Charging Methodology or the BSC will take precedence.

The CUSC all Code subsidiary documentation can be downloaded from the National Grid Website. The Statement of the Use of System Charging Methodology and the CUSC can be downloaded from the website.

For more information please contact the BSC Service Desk at bscservicedesk@cgi.com or call 0870 010 6950.