

nationalgridESO

TNUoS in 10 Minutes

October 2018

This introductory guide to Transmission Network Use of System (TNUoS) charges will cover:

- What the TNUoS charge is
- How and when generation and demand users pay these charges
- How TNUoS tariffs are calculated

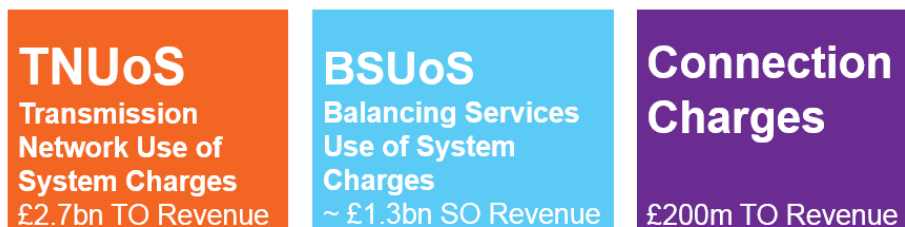
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What is TNUoS?

All users of the GB electricity network pay to use it in some way. Generators use the network to transport their electricity to where it is needed. Demand users use the network to consume electricity when they need it.

Users of the network pay for use of the transmission system through three charges:

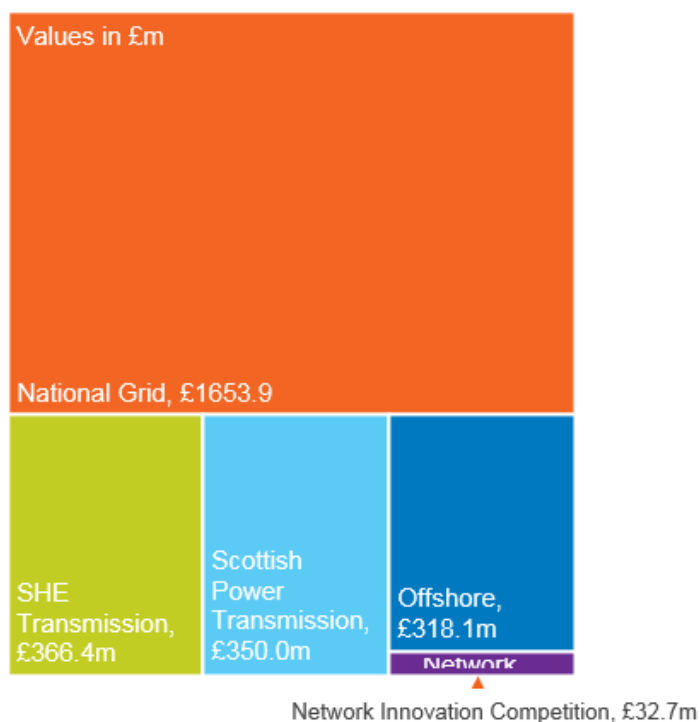


Transmission Network Use of System (TNUoS) charges recover the cost of installing and maintaining the transmission network in England, Wales, Scotland and offshore. The charging methodology is detailed in Section 14 of the Connection Use of System Code (CUSC).

The Electricity System Operator (ESO) recovers the revenue on behalf of

- National Grid Electricity Transmission (NGET)
- Scottish Power Transmission
- Scottish Hydro Electricity Transmission
- Offshore transmission owners
- Other network schemes, for example Network Innovation Competition (administered by Ofgem)

The chart below shows the split in revenue between the different entities the revenue is collected on behalf of.



Who pays TNUoS?

TNUoS tariffs aim to be reflective of the cost of using the network, to help network users make efficient decisions about where and when to use the network.

Tariffs are broken down in three ways:

1. The **Locational** charge (wider TNUoS) – calculated by the Transport model - this reflects the incremental cost of power being added to the system at different geographical points.
2. The **Residual** charge (wider TNUoS) – what is not recovered under the Locational charge is recovered in this charge so that the Transmission Owners recover their total allowed revenue.
3. a.) The local circuit charge (Local Circuit TNUoS) – only paid by certain generation.
b.) The local substation charge (Local Substation TNUoS) – only paid by certain generation.

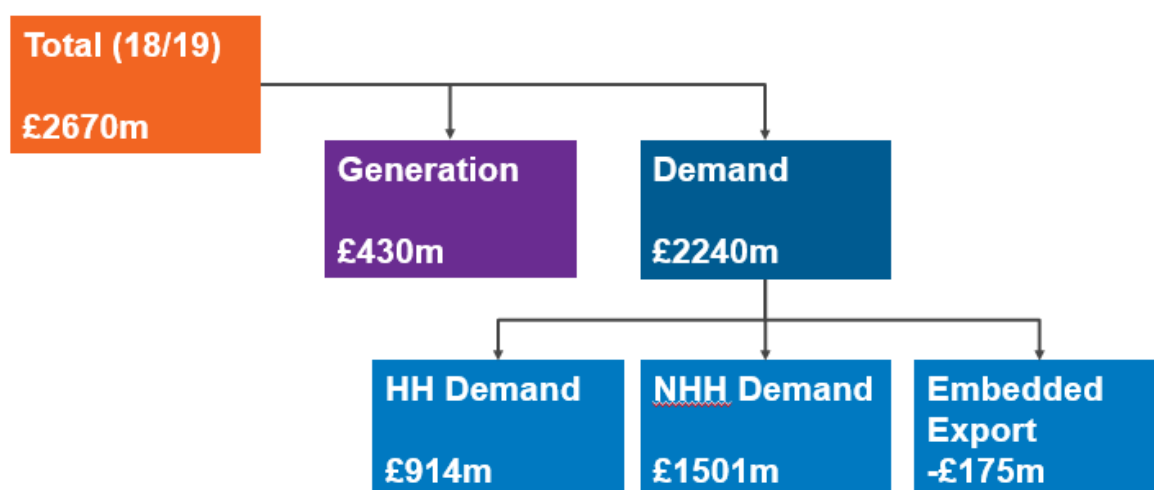
Generators who are connected to the transmission network and embedded generators with ≥ 100 MW Transmission Entry Capacity (TEC) pay TNUoS charges. Generation TNUoS is charged on the basis of Transmission Entry Capacity (TEC). Generators are also liable for Demand TNUoS if they take demand over the Triad periods.

All licenced **suppliers** are liable for TNUoS for their gross demand from the transmission network. There are three categories of demand charges:

- **Half Hourly (HH)**, metered demand over the Triad periods
- **Non-Half Hourly (NHH)**, annual consumption between 4pm-7pm daily
- **Embedded Export Tariff (EET)**, a credit for embedded generation over the Triad periods.

All directly connected demand sites pay HH demand charges and embedded generators (< 100 MW) which contracts directly with National Grid ESO can gain Embedded Export payments.¹

The diagram below illustrates how the TNUoS revenue collected is split between demand and generation charges.



¹ Embedded generators which are not directly contracted with National Grid ESO may be paid for the generation over the Triad periods by their supplier.

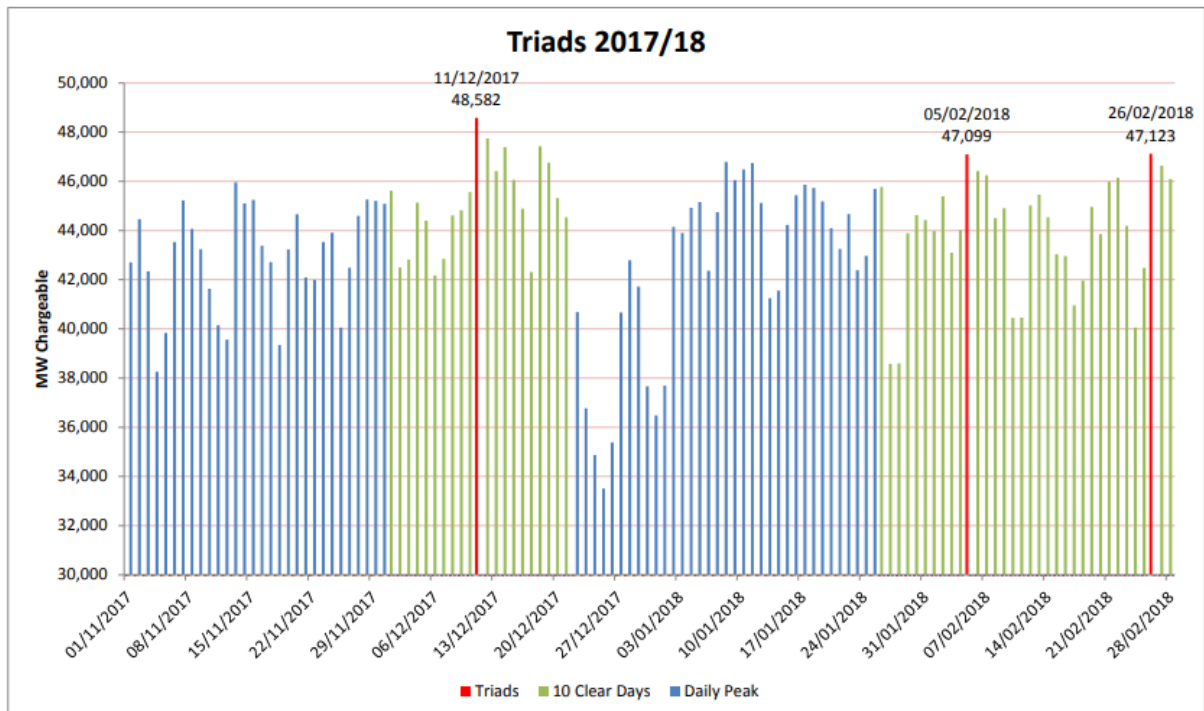
TNUoS Demand Tariffs

For TNUoS, there are two 'types' of demand:

- Half hourly settled (generally commercial)
- Non-half hourly (generally domestic, or smaller non-domestic premises).

HH customers are charged according to the demand (MW) they take over the three Triad periods each year; the charge is levied through a £/kW tariff. Triads are defined as the three half-hours with the highest net system demand, between November and February (inclusive), separated by at least ten clear days.

The below figure demonstrates the three Triads recorded for 2017/18.

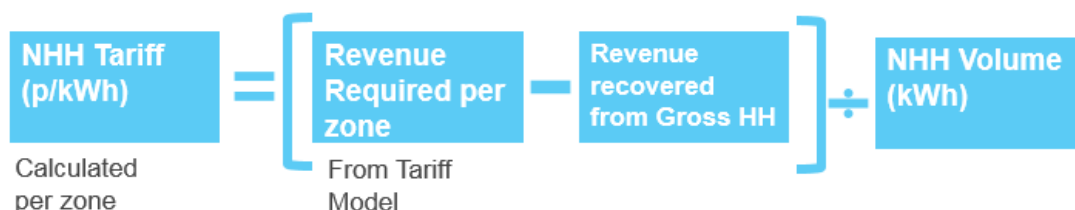


TNUoS tariffs are set a year ahead and charges are reconciled based on actual usage at the end of that financial year. Users are then billed monthly for this TNUoS charge.

For all consumers, there is a locational element to the charge (across 14 demand zones) plus a residual.



NHH charges are based on annual consumption between 4 and 7pm (in kWh), through a pence/kWh tariff. Once the total revenue the HH Tariff will recover from demand has been calculated, the NHH Tariff is calculated to recover the remaining revenue to ensure the right amount is recovered.



Embedded Export Tariff

The EET is another element of TNUoS. It was introduced as a new tariff under code modifications CMP264/265. The tariff is paid to embedded generators based on their HH metered generation export volumes during the Triads.

The tariff is payable to exporting HH demand customers and embedded generators (<100MW).



*Avoided Grid Supply Point (GSP) Infrastructure Credit.

The AGIC is set at the start of the price control period and is increased by RPI each year. It will be recalculated at the start of the next price control period in 2021. The residual element of the EET is being reduced each year until 2020/21, when it will be set at zero.

The revenue paid out through the EET is recovered from the demand residual, to ensure overall revenue recovery is correct.

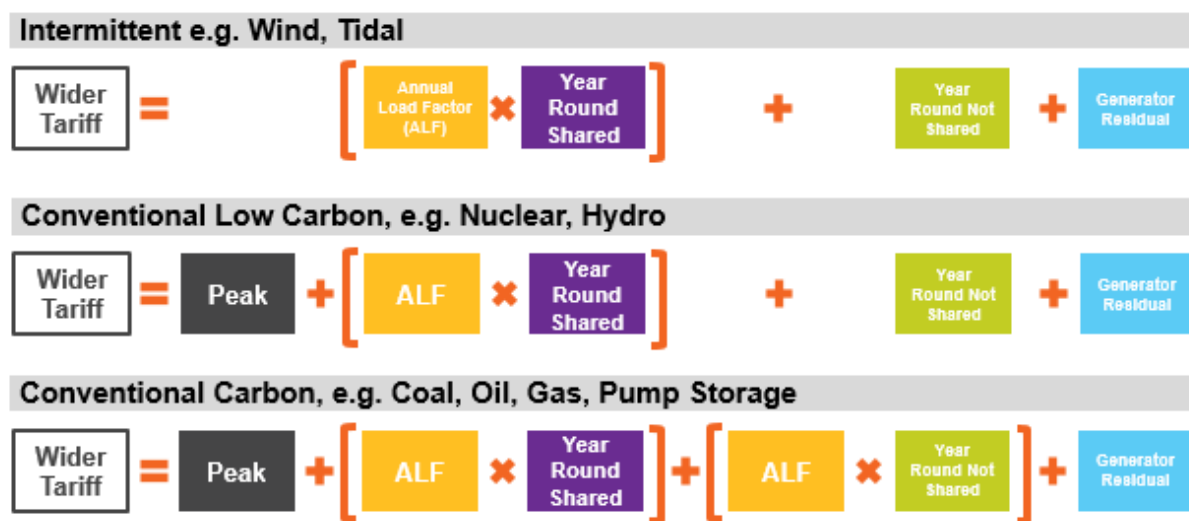
TNUoS Generation Tariffs

Generation TNUoS recovers charges from transmission connected generation and embedded generation of >=100MW. The maximum revenue that can be recovered from generators is set by EU regulation, at an average value of €2.50/MWh.

Generators are charged according to the greatest amount of Transmission Entry Capacity (TEC) they hold each year. This is the maximum amount of power they can put on the system at any one time. The wider tariff applies depending on the type of generator and their location; generator types are split by intermittent, conventional low carbon and conventional carbon. The wider tariffs are a £/kW tariff that differs between each of the 27 generation zones.

The peak element of the tariff looks at network investment to secure peak demand. Intermittent generators such as onshore and offshore wind do not pay this element.

The below figure details how the three wider tariffs are calculated.



Annual Load Factors (ALFs) are calculated at power station level and give an average measure (over five years) of a generator’s output compared to TEC using:

- TEC
- Metered Flows
- Final Physical Notifications.

As part of generation tariffs, there are also local substation and circuit tariffs for onshore and offshore generators.

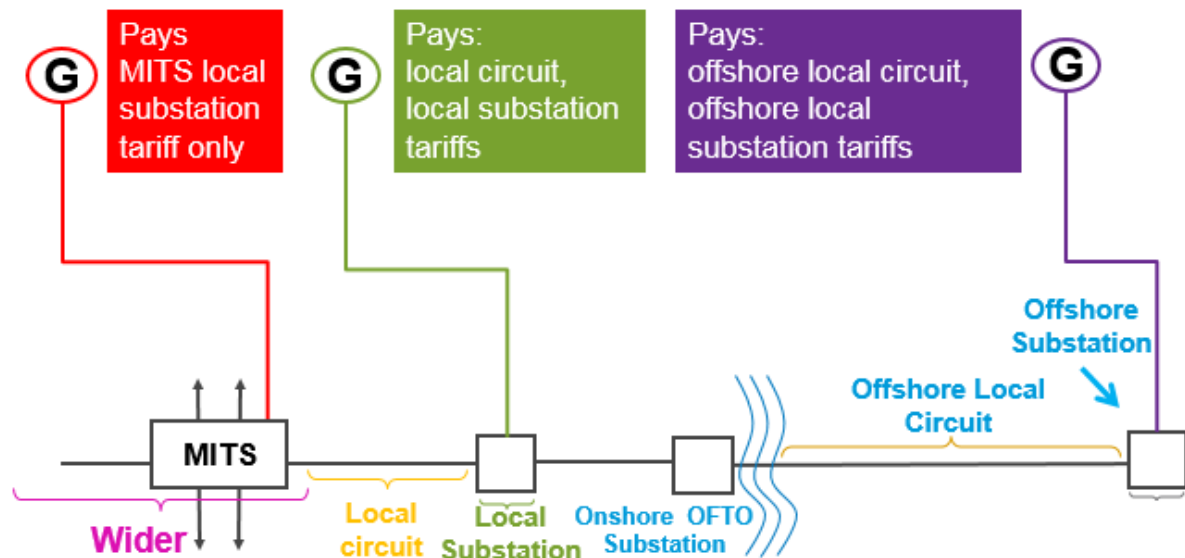
If a transmission-connected generator is directly connected to a substation defined as a Main Interconnected Transmission System (MITS) node, then they will only need to pay the **onshore local substation tariff** and will usually not have a local circuit tariff, depending on their connection agreement.

Local substation tariffs are charged on a £/kW basis. All generators connected to the transmission network will pay a local substation tariff. Embedded generators do not pay an onshore local substation tariff.

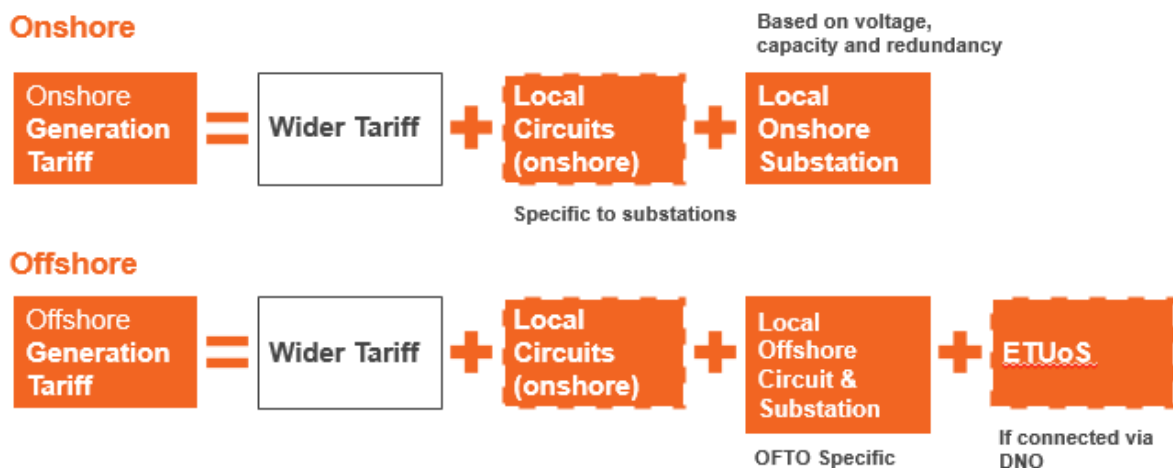
Where a transmission-connected generator is **not** directly connected to a MITS substation, the **onshore local circuit tariffs** reflect the cost and flows on circuits between its connection and the MITS. Local circuit tariffs are charged by £/kW and can change as a result of system flows and RPI. Embedded generators do not pay an onshore local circuit tariff.

Local offshore tariffs (substation, circuit and ETUoS² if applicable) reflect the cost of offshore networks connecting offshore generation. They are calculated at the beginning of the price control period or upon the transfer of the ownership of the offshore transmission assets from the generator to the offshore transmission owner (OFTO). The local offshore tariffs are charged on a £/kW basis and are indexed by RPI each year.

The below diagram shows what is included in the local circuit charge for onshore and offshore generators.³



Once the wider tariffs and the local substation and circuit tariffs have been calculated, if all components have positive values, the sum of each of these components gives the final tariffs, as shown below for offshore and onshore generators. The final tariffs used to charge generators are usually specific to each individual generator.



This concludes the TNUoS in 10 minutes guide. If you would like further information, please contact us by emailing TNUoS.Queries@nationalgrid.com.

² Embedded Transmission Use of System charges. These apply only when an offshore generator connects into the local distribution network to access the transmission network.

³ Please note: an OFTO network may connect directly to a MITS substation, rather than to a local substation/local circuit.

Please note: If there are any inconsistencies between this guidance note and the industry framework documents (CUSC, the NGC Use of System Charging Methodology or the BSC), the industry framework documents will take precedence. The CUSC and all Code subsidiary documentation can be downloaded from the National Grid Website.

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