ACER

European Union Agency for the Cooperation of Energy Regulators

ACER Webinar on Electricity Network Tariffs for Injection

Wednesday, 10 November 2021

Presentations:

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Harriet Harmon (Ofgem, Great Britain, UK):

- **Key concepts/principles:**

- Total transmission network use of system charges ~£3bn p.a. – majority (~£2.2bn) paid by demand;
- Charges reflect the *relative* Long Run Marginal Cost ("LRMC") of siting production at one location vs. another;
- Absolute £/kW charges differ by location and fuel type, and total costs to the producer are dependent on load factor;
- Injection charges are paid by all producers connected to the transmission system, and some connected to the distribution network;
- Residual charges should only be faced by 'final demand' – not production, not storage

838/2010 is retained and now forms part of GB legislative framework:

€2.50 x Error Margin x Exchange Rate = £x
£x x forecast production output MWh = £xm

Forecast revenue from charges that are ***not*** those for assets required for connection, ancillary services, or losses are added together

The difference between those charges and £xm becomes a credit offsetting production charges (added to demand)

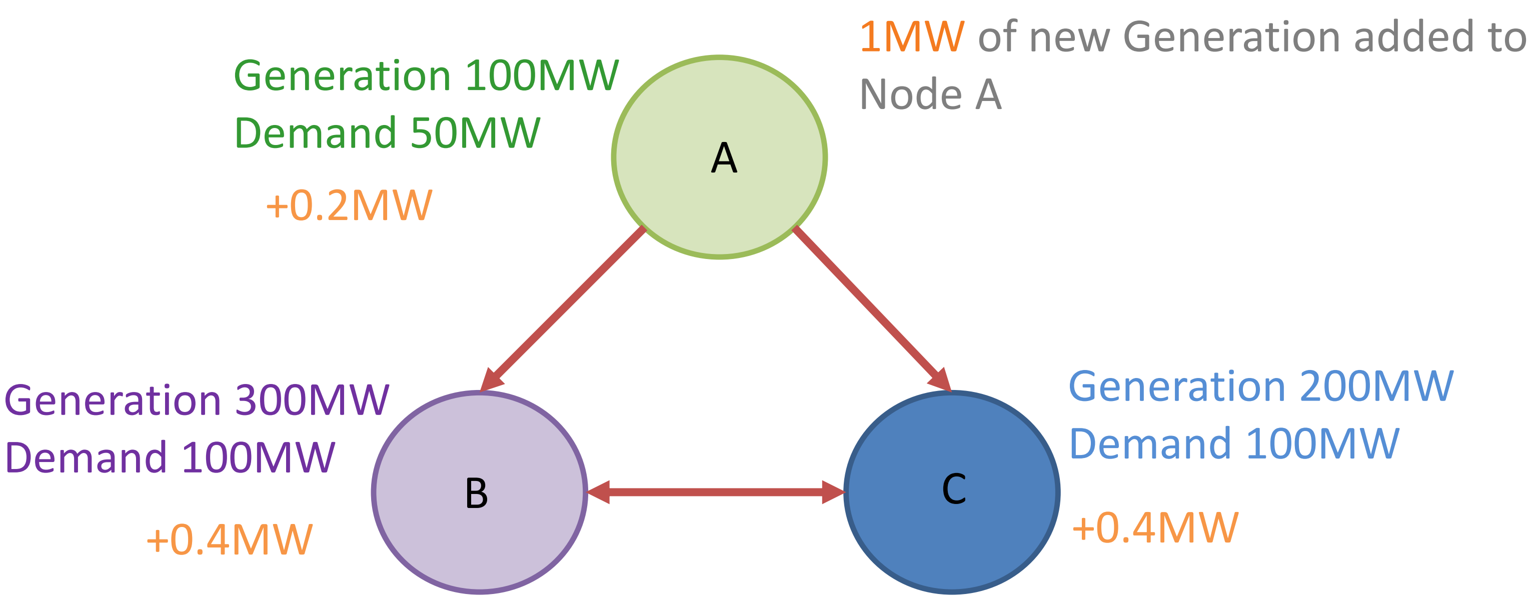
The TSO is responsible for recovering the costs of the transmission system from production and consumption – this is on behalf of the transmission owners, including those running offshore networks

A representative model of the GB network is maintained by TSO – this forms the basis for charge calculation. The model assumes an unconstrained network.

The model (the "Transport Model") creates the incremental cost of increasing production at each 'node' (substation) on the GB network. It does this by:

- Mapping existing production and consumption loads at each node;
- Adding 1MW of production to each node, and tracking it until it is consumed by demand users – this 'tracking' assumes that the 1MW is consumed pro rata to the existing consumption loads at each neighbouring node;
- Assessing the average, annuitised costs of the assets utilised to transmit that 1MW to the sources of demand

The transport model



1MW of generation capacity is added to a node on the network. As the system has to be in balance, 1MW of demand has to be added too.

The 1MW increment is added to demand nodes based on their proportion of total demand.

Total demand in this example is 250MW. Node A accounts for 20% of that total demand, so 20% of the incremental 1MW is assigned to Node A. Nodes B and C both represent 40% of total demand, so both pick up 40% of the new 1MW

The costs of transporting that new 1MW from Node A to demand at Nodes A, B and C creates a nodal £/kW figure for generation. The inverse nodal £/kW applies to new demand. These £/kW rates are grouped together to form zonal tariffs.

Charge composition

GB producers pay a 'Wider' charge – this reflects the LRMC of their connection to and use of the shared infrastructure.

They also pay a 'Local' charge , reflecting the costs of the assets required to connect them to that shared infrastructure.

The Wider charge is split into two categories: Peak, and Year-Round.

For **Year-round**, there's a further split based on technology type:

- **Year-round Shared** charge – payable by everyone, reflecting the reduced level of investment that will be required in those parts of the system with a broad mix of generation technologies.
- **Year-round Not Shared** looks at the extent to which a generator is likely to trigger network investment – that's payable by everyone, but *how* it's paid is different for different technologies. The Not Shared charge reflects the higher level of investment that will be required where there are many intermittent producers in an area

Peak background looks at how the network would be used if the maximum amount of demand on the network was being met by non-intermittent generation (i.e. everything except Wind, Tidal, Solar).

The transport model is run against two scenarios:

- One assumes that peak demand is being met by a mix of technology types – we call this the 'year round' scenario;
- The other assumes that peak demand is being met solely by conventional plant – we call this the 'peak' scenario

These scenarios represent the planning standards to which each transmission owner is required to build/maintain the network.

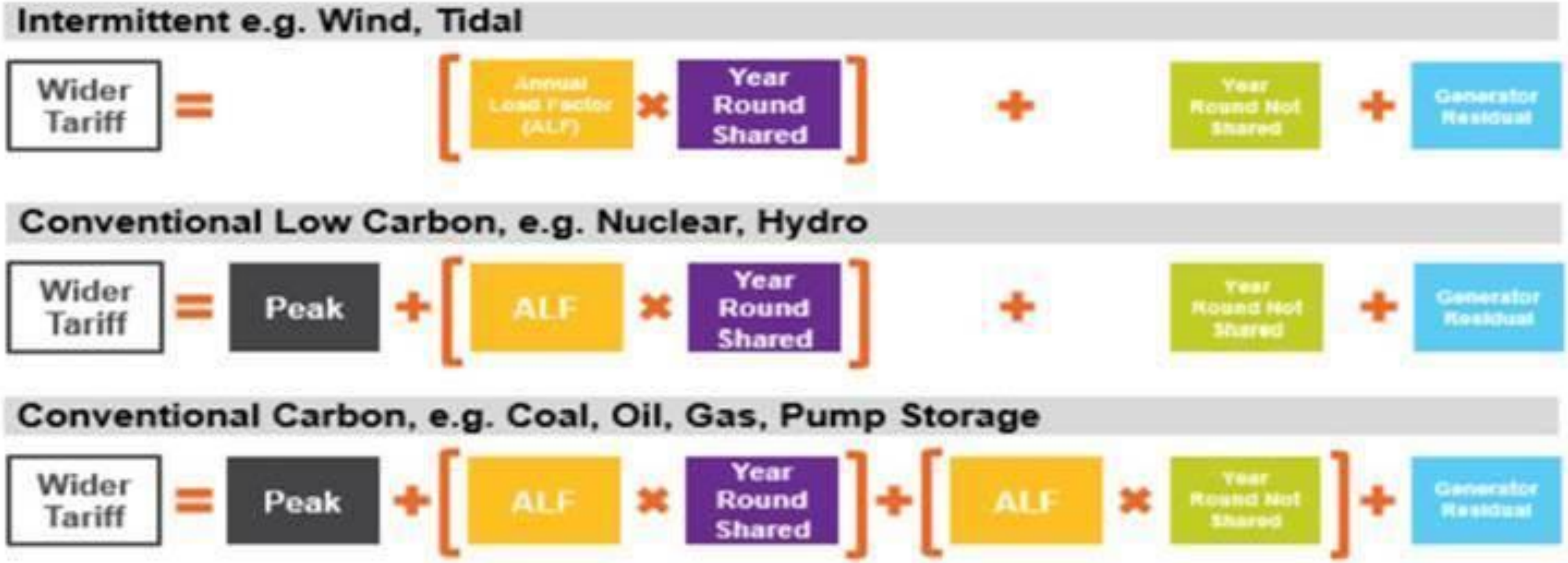
Under the 'year round' scenario – to ensure that charges reflect as far as possible how the system is used by different technologies - each circuit on the transmission system is classed as 'shared' or 'not shared' – this is based on the technology type of the producer(s) in that location. This classification influences charges faced by producers:

If several wind farms are located close together, it is likely that they have a high coincidence of operation and therefore sharing of circuits is unlikely. This means that the TO is more likely to have to develop the network to accommodate the individual capacity of each wind farm.

If a wind farm and a CCGT are located close together, they do not necessarily have the same degree of operational coincidence and it is therefore more likely that the TO can develop the network to accommodate less than their aggregate capacity. It is also likely that the CCGT can be bid off more cheaply than the wind farm – bidding off may well be cheaper than physical network development.

What we see in the charging methodology as a result is that conventional carbon power stations pay their Year-round Not Shared based on their own usage of the infrastructure, using their annual load factor, whereas plant like hydro, and intermittent plant like wind pay based on their capacity.

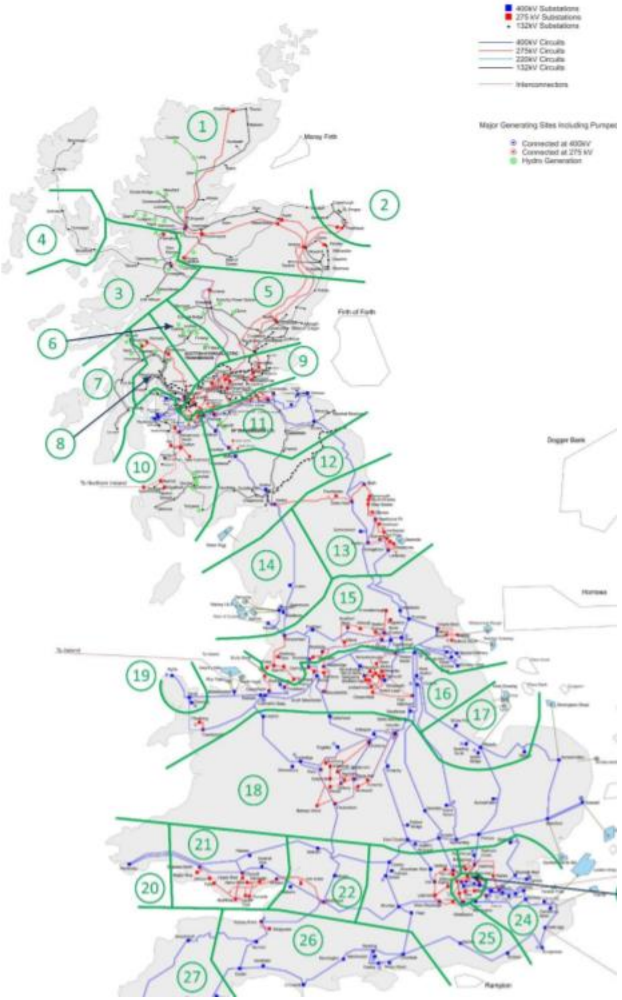
This is because for the low carbon/intermittent plant, the network is assumed to be built to accommodate their capacity whereas the carbon plant is likely only utilising assets some of the time or requires less build.



GB is split into 'zones' for the purposes of levying transmission charges.

Nodal £/kW charges are 'grouped together' to form zones based on geographical and electrical proximity, and the extent to which charges are similar.

Historically, nodes could only be grouped together if their £/kW charges were within +/- £1 of each other. This is under review.



Only producers connected to the transmission network, or those connected to the distribution network who have agreed a transmission capacity limit with the TSO are liable for these charges – this is under review.

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INJECTION CHARGES IN LV

V

VIESTURS KADIKIS

PRESENTATION ACER WEBINAR

10.11.2021.

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PRESENTATION CONTENT

1. Overwiev
2. Injection charge implementation process
3. Tariff calculation
4. Next steps

1. OVERWIEV

- ✓Produced electricity in 2020 – 5,5 TWh:
  - ✓ TSO level – 4,3 TWh
  - ✓ DSO level – 1,2 TWh

- ✓Baltic electricity market 14,84 TWh – LV 37%.
- ✓Electricity market in which we working - 263,6 TWh – LV 2%.

2. IMPLEMENTATION PROCESS

1. Justification for implementation:

✓ All users must pay for system use.

In LV Electricity market law is set (5 (2)):

«market participant has the right to use the transmission and distribution systems for the transportation of electricity for the system service tariffs determined in accordance with the procedures laid down in this Law and the law On Regulators of Public Utilities»

2. Regulation No 838/2010. Annex Part B (3).

«The value of the annual average transmission charges paid by producers shall be within a range **of 0 to 0,5 EUR/MWh**, except those applying in Denmark, Sweden, Finland, Romania Ireland, Great Britain and Northern Ireland»

2. IMPLEMENTATION PROCESS

1. Idea of injection charge introducing was presented in Baltic mini forum to Baltic colleagues.

2. Amendments in electricity distribution system tariff calculation methodology (in public consultation).
   - ✓ Differentiated tariff – tariffs according to which distribution system user, including electricity producer, will pay distribution service.
   - ✓ Producers pay differentiated tariff from 1.january 2021.

3. Public consultation on tariff calculation methodology (amendments) with stakeholders (2 weeks long).

   LV largest producers submitted an opinion about injection charge:
   - ✓ Concerns about LV producers' discrimination in Baltic region.
   - ✓ Also, Regulator in approving process should consider ACER opinion.

2. IMPLEMENTATION PROCESS

4. Injection tariffs in distribution level approved (2019). In force from 1.january 2021.

5. New electricity transmission system tariff calculation methodology (in public consultation).

- ✓ Differentiated tariff – tariffs according to which transmission system users, including electricity producer, will pay transmission service, which is directly connect to transmission system.

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2. IMPLEMENTATION PROCESS

6. Public consultation on transmission tariff calculation methodology with stakeholders (2 weeks).

LV largest producer, TSO, Ministry of economic and Wind energy association:

- ✓ **Concerns about LV producers' discrimination in Baltic region.**
  - ✓ *According to NRA available information in EE is set G-tariff in DS level, also we do not see possible discrimination, because in NP region also G-charge is set. Also to ensure that their is no discrimination between SO, the G-charge is in force in the same time.*
- ✓ **Also indicates, the benefits to SO from electricity producers.**
  - ✓ According to maximum level of injection charge (LV), it is challenging to set cost reflective tariff, because according to NRA estimates this tariff covers only some part of producers incurred costs.
- ✓ **Could affect the development of electricity production capacity**
  - ✓ *Government responsibility is to establish system to facilitate the entry of new producers and producer incurred costs could not be attributed to another system users.*

3. TARIFF CALCULATION

- ✓ **G tariff is calculated in transmission and distribution level based on same principal.**
- ✓ Regulation No 838/2010 set that max level paid by producers shall not exceed 0,5 EUR/MWh.
- ✓ DSO level – 0,64 milj.EUR (0,2% from all expenses)

2,48 EUR/KW/year.

- ✓ TSO level – 2,44 milj.EUR (3,25% from all expenses)

0,90846 EUR/KW/year.

$$\text{G tariff} = \frac{\text{produced ele (MWh)} * 0{,}5}{\text{installed ele production capacity}}$$

4. NEXT STEPS

1. In Regulation No 838/2010 specified max levels should be revised (increased), to ensure cost reflective injection tariff.
2. With introducing injection tariff main target was reached. All users pay for system use and end users' tariffs reduced.
3. Evaluate possibility to introduce location tariffs for electricity producers.


Thanks for attention.
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Injection charge in Portugal

10 November 2021

Agenda

1. Overview
2. Motivation for the introduction/phase out
3. Tariff principles
4. Lessons learned and further reflections

1. Overview

Key facts

- **Application**. Years 2012 to 2021.
- **Value**. 0.5 EUR/MWh, recovering ≈ 9% of transmission revenues in 2021.
- **Structure**. Energy charge (EUR/MWh), with peak and off-peak prices.

Tariff methodology

Given the injection forecast for the peak and off-peak periods, and a Peak/Off-peak ratio of ≈ 1.3, the injection charge was determined to obtain an average value of 0.5 EUR/MWh.

2. Motivation for the introduction/phase out

Introduction in 2012

- Level playing field, after ES introduced in 2011 a G-charge of 0.5 €/MWh.
  - = Limit in Regulation 838/2010

- Instead of the flat charge in ES, PT introduced an average energy charge of 0.5 EUR/MWh with Time-of-Use and differentiation by voltage level.
  - Approximation to a more cost-reflective capacity charge that depends on energy flows.

Phase-out in 2022

- Followed the elimination in ES of the G-Charge during 2020.

- Also, there is no dominant practice in Europe.

3. Tariff principles

Cost reflectivity

✓ Time-of-use structure to reflect the need for incremental investments.

- *Energy charge (EUR/MWh), 2-period structure*
- *Peak Price > Off-peak price (because of network utilization)*

✓ Discrimination by voltage level, to distinguish degree of net exports/imports.

- *Locational signal to foster connection in net importing grids.*
- *= zero for LV (net importing grid), same charge in other voltage levels.*

Non-distortion of competition

✓ To ensure level playing field among producers in PT and ES.

Non-discrimination

✘ Producers with Feed-in-Tariffs were exempted from the impact.

4. Lessons learned and further reflections (1/2)

Lessons learned

- Protection of investors' expectations affects the introduction of a G-charge.

- When eliminating the G-charge, and although the impact on the final consumer should in theory be nil or negligible, it can be difficult to prove this to consumers (ex-ante and ex-post).

- Rules with cross-border effects would benefit from consultation of neighbouring NRAs.
  - *The European Network Code for gas transmission tariffs requires to consult neighbouring countries (multipliers, discounts on cross-border tariffs).*

4. Lessons learned and further reflections (2/2)

Reflections

- Energy transition. The need for G-charges may depend if the power sector becomes dominantly …
  - *… **local** (energy communities, local storage) ➡ flexibility markets can be a more appropriate tool to charge dynamically for grid use.*
  - *… **supra-national** (super grids, off-shore) ➡ transit countries as in the gas sector; injection charges and some burden sharing with injections may be desirable.*
- Inverted power flows. Will occur more frequently with distributed energy resources (DG, vehicle-to-grid, energy sharing). Who should pay for investments required to upgrade the network?
- Locational signal. Would a cost-reflective injection charge promote that certain technologies will locate in the most convenient locations?

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