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To all interested industry parties

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Dear Colleagues,

Value of the 'Avoided GSP Infrastructure Credit' – a component of the Embedded Export Tariff introduced under CMP264/265

This letter provides the value of the Avoided GSP Infrastructure Credit (AGIC) for the 2018/19 TNUoS tariffs and details the associated methodology as to how the value has been calculated.

From 1st April 2018, TNUoS tariffs will be set according to the charging methodology introduced under WACM4 of CMP264/265. Following full implementation of CMP264/265 within the 2018/19 TNUoS tariffs the structure of the Half-Hourly Demand tariffs will change. The existing net Half-Hourly Demand tariff is to be replaced with two new tariffs, a **Gross Half-Hourly Demand Tariff** charged to gross Demand and an **Embedded Export Tariff** paid to embedded generation exports.

The **Embedded Export Tariff (EET)** is paid, based on output at the Demand Triads, to both suppliers and embedded generators (CVA registered <100MW) directly contracted with National Grid. The value of the EET is calculated per Demand zone as the Demand locational tariff, plus the Avoided GSP Infrastructure Credit (AGIC) and a phased reduction in the residual (with the total floored at zero for the avoidance of negative tariffs). The total cost of paying the EET to embedded exports at Triad is added to the total Revenue to be recovered through the gross Demand residual; this forms part of **the Gross Half Hourly Demand Tariff.** The legal text for calculating the EET and the AGIC is shown in Appendix 1.

For more information on the revised Demand Half-Hourly TNUoS tariffs and charging arrangements please refer to the CMP264/265 guidance document[1] which is published in parallel to this letter on our *Value of the Avoided GSP Infrastructure Credit.*

Following the methodology defined in the legal text for CMP264/265 (please see Appendix 1), the AGIC has been calculated for 2018/19 as follows:

Avoided GSP Infrastructure Credit	2018/19	£3.22 / kW

For other charging years in the RIIO-T1 price control period the value of the AGIC will be increased by inflation. At the start of RIIO-T2 price control period the value will be recalculated.

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[1] http://www2.nationalgrid.com/UK/Industry-information/System-charges/Electricity-transmission/Approval-conditions/Condition-5/

The methodology used to derive this value can be found in Appendix 2.

Value of the Phased Residual

The value of the AGIC is used to calculate the phased residual used in the EET in 2018/19 and 2019/20, with the value reducing to £0/kW from 2020/21 onwards. The 2017/18 (net) Demand residual is £47.26/kW. The phased residual for future charging years is as follows:

Phased Residual	2018/19	£29.36 / kW
	2019/20*	£14.65 / kW
	2020/21 onward	£0 / kW

*Assuming AGIC will increase by RPI of 3%.

Next steps and future forecasts

My letter published on the 21 June[2] outlined a revised timetable for our forecasts for TNUoS tariffs in the remainder of the 2017/18 charging year after Ofgem's decision to implement CMP264/265.

Our next step is a revised forecast for the 2018/19 TNUoS tariffs, to be published by the end of October 2017. This forecast will use the value of the AGIC and phased residual published in this letter and the methodology introduced by CMP264/265.

By end of November 2017 we are aiming to produce an updated five-year forecast based on the new methodology. Draft 2018/19 TNUoS tariffs will be published by 24th December 2017, followed by final 2018/19 TNUoS tariffs by the end of January 2018.

If you have any further queries, please contact us on 01926 654633.

Yours faithfully

Paul Wakeley
Revenue Manager

Appendix 1

Extract of Legal Text for CMP264/265 WACM4

CUSC section 14.15.114 defines the new Embedded Export Tariff (EET) and associated **AGIC methodology** as follows:

14. 15.114 The embedded export tariff will be applied to the metered Triad volumes of Embedded Exports for each Demand zone as follows:

$$EET_{Di} = ITT_{DiPS} + ITT_{DiYR} + EX$$

Where:

ITT_{DiPS} = Peak Security Initial Transport Tariff for the Demand zone;

ITT_{DiYR} = Year Round Initial Transport Tariff for the Demand zone, and

EX:
First Charging year following the implementation date of CMP 264/265:

$$= \frac{2}{3}(XP - AGIC) + AGIC$$

Second charging year following the implementation date of CMP 264/265:

$$= \frac{1}{3}(XP - AGIC) + AGIC$$

Third charging year following the implementation date of CMP 264/265 and every subsequent charging year:

$$= AGIC$$

Where:

XP = Value of Demand residual in charging year prior to implementation.

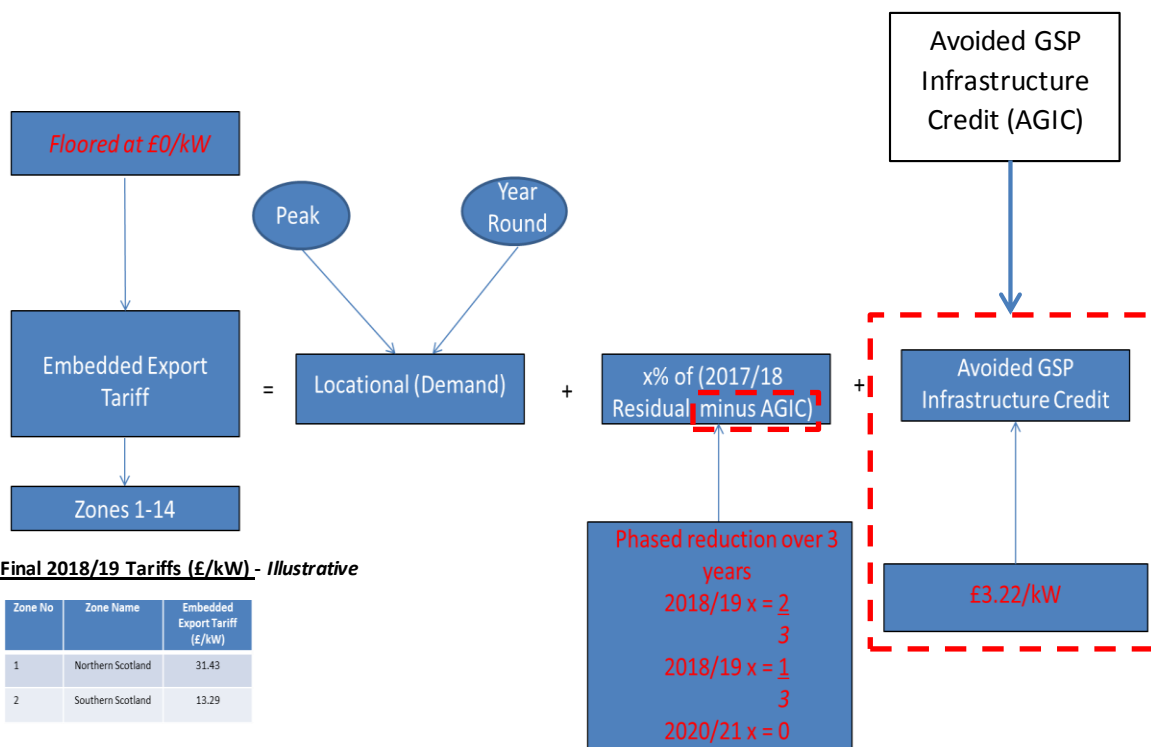EX = The Avoided GSP Infrastructure Credit (AGIC) which represents the unit cost of infrastructure reinforcement at GSPs which is avoided as a consequence of embedded generation connected to the distribution networks served by those GSPs. It is calculated from the average annuitised cost of that infrastructure reinforcement divided by the average capacity delivered by a supergrid transformer.

The Avoided GSP Infrastructure Credit is calculated at the beginning of each price control period and in the first applicable charging year following the implementation date of CMP264/265 using data submitted by onshore TSOs as part of the price control process. The data used is from the most recent [20] schemes submitted under the price control process and indexed each year by the RPI formula set out in 14.3.6 until the end of the price control. For the avoidance of doubt, this approach does not include the cost of the supergrid transformers or any other connection assets as they are paid for by the relevant DNOs thorough their connection charges.

The Value of EETDi will be floored at zero, so that EETDi is always zero or positive.

The Embedded Export Tariff as per WACM4 CMP264/265 is represented in the diagram below:

Embedded Export Tariff (EET)

Diagram: Embedded Export Tariff (EET)

- *Floored at £0/kW*
- Embedded Export Tariff
- Zones 1-14
- Peak
- Year Round
- = Locational (Demand) + x% of (2017/18 Residual minus AGIC) + Avoided GSP Infrastructure Credit
- Avoided GSP Infrastructure Credit (AGIC)
- Phased reduction over 3 years
  - 2018/19 x = $\frac{2}{3}$
  - 2018/19 x = $\frac{1}{3}$
  - 2020/21 x = 0
- £3.22/kW

Final 2018/19 Tariffs (£/kW) - *Illustrative*

Zone No	Zone Name	Embedded Export Tariff (£/kW)
1	Northern Scotland	31.43
2	Southern Scotland	13.29

Appendix 2

Avoided GSP Infrastructure Credit (AGIC)

The Avoided GSP Infrastructure Credit (AGIC) has been calculated as per WACM4 in CMP264/265, this is a component within the "Embedded Export Tariff" which is payable to embedded exports.

The AGIC is calculated in the first applicable charging year following the implementation date of CMP264/265 and at the beginning of each price control period using data submitted by onshore TSOs as part of the price control process.

The AGIC is the average annuitized **cost of infrastructure reinforcement works at GSPs**, divided by the **capacity at those GSPs**.

Cost of infrastructure reinforcement at GSPs may depend on the type of project: for example simpler GSP reinforcement projects may only consist of busbar extensions, additional switchgear bays or protection and control works. In more complex projects the cost may include building a new substation for the new infrastructure assets. For reference infrastructure assets do not include assets outside of the GSP (for instance, overhead lines or cables) as these are included in TNUoS zonal or local circuit tariffs charges. We have also excluded the cost of connection assets such as the supergrid transformer which is paid for by the DNOs through connection charges.

All prices are converted into 2018/19 prices, applying the formula as defined in CUSC section 14.3.6; the annual cost is calculated using the annuity factor of 6.25%.
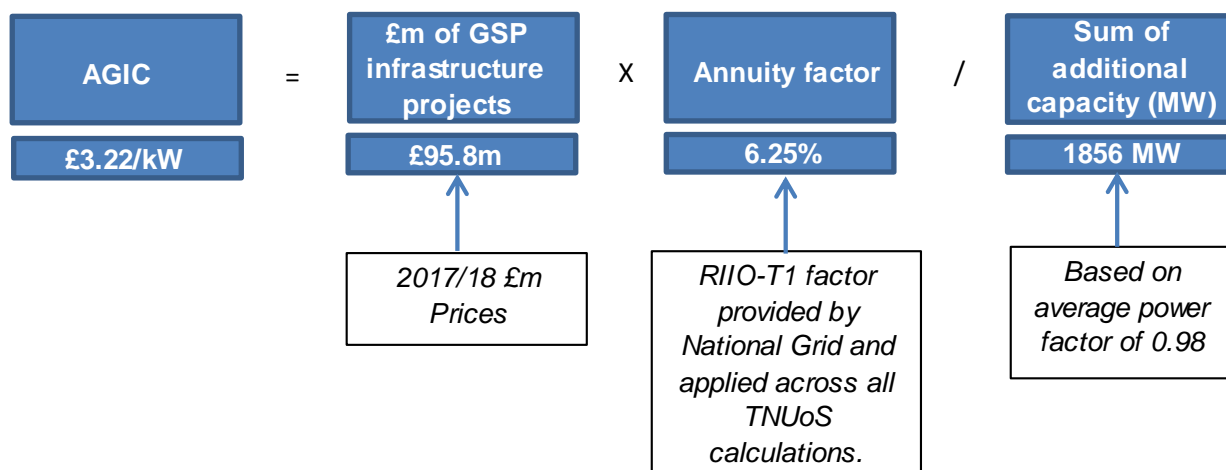
Capacity at GSPs is calculated based on the additional MW capacity created from the GSP infrastructure reinforcement works. This would specifically involve the capacity increase achieved from the new supergrid transformer(s) at the GSP site. The infrastructure capacity is calculated based off the total apparent power (MVA) rating of assets commissioned. True power (MW) was derived for the values using the "power triangle" relationship, where:

$$\text{True Power (MW)} = \text{Apparent Power (MVA)} \times \text{Power Factor}$$

We have assumed that the total effective resistance of the flow of current in the infrastructure assets was negligible as MVA in practice varies little to MW, hence an average power factor of 0.98.

As part of the calculation of the AGIC we requested data from the 3 onshore Transmission Owners. A maximum of 20 projects were allowed to be used in the calculation of the AGIC as per WACM4 for CMP264/265. A total of 10 projects were provided by National Grid Electricity Transmission and Scottish Hydro Electric Transmission. Scottish Power indicated they did not have any costs for GSP infrastructure works not covered by connection charges. The projects were specifically for GSP reinforcement works which increased DNO capacity and were commissioned in RIIO-T1 to date.

The methodology to calculate the AGIC value using the above elements is as follows:

AGIC	=	£m of GSP infrastructure projects	X	Annuity factor	/	Sum of additional capacity (MW)
£3.22/kW		£95.8m		6.25%		1856 MW

| | *2017/18 £m Prices* | *RIIO-T1 factor provided by National Grid and applied across all TNUoS calculations.* | *Based on average power factor of 0.98* |

The associated spread of costs and increased capacity of the GSP infrastructure reinforcement works for the 10 projects can be seen in the following graph. It is not possible to provide further details of these projects due to commercially sensitive information relating to the onshore Transmission Owners.

GSP Infrastructure Cost (£000s) and Capacity (MW)

Legend:
- Cost £000's (bars)
- Average Cost £000's (dashed green line)
- Capacity (MW) (red line)
- Average Capacity (MW) (dotted line)