

Indicative Wider Generation Tariff and Charge Calculator under CMP213 Diversity 1

Feb 2016

Purpose

The charge calculator has been designed to allow customers liable for Generation Transmission Network Use of System (TNUoS) charges to work out their indicative Wider Generation TNUoS charges. It uses the charging methodology under CUSC Modification CMP213 Working Group Alternative Modification 1. This methodology has a System Peak Tariff, Shared Year Round Tariff, Not Shared Year Round Tariff and Residual Tariff which together make up the Wider Generation TNUoS Tariff. This methodology was approved by Ofgem in July 2014 for application from April 2016¹.

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Overview of Diversity 1

CMP213 was raised because the electricity transmission network is increasingly planned using a cost-benefit approach² which reflects year round operation of the system as well as ensuring it is robust for peak demand. Implicit within this, some sharing of the network also takes place between generators.

The methodology splits the locational part of tariffs into a System Peak Tariff and a Year Round Tariff. The Peak Tariff reflects the fact that the network is planned for Peak Security conditions and this element is multiplied by a generator's capacity (MW). Intermittent³ generators are not assumed to contribute to Peak Security and therefore are not exposed to this element.

The Year Round Tariff reflects the fact that the network is increasingly planned on a cost-benefit basis. An individual generator's Annual Load Factor (ALF)⁴ is used as a proxy for its impact on transmission network investment. Also, the relationship between load factors and constraint costs deteriorates in areas with little diversity between generation plant types, i.e. most of the generation is either conventional or intermittent. This is particularly the case in areas with large amounts of low carbon generation, where the cost of constraining off generation can be expensive compared to conventional generation. The methodology limits sharing on the system when diversity behind a transmission boundary reduces by splitting the Year Round element into a Shared Year Round and Not-Shared Year Round Tariffs. The Shared Year Round Tariff is multiplied by an individual generator's ALF and by its capacity (TEC) to calculate the Indicative Charge, whilst the Not-Shared Year Round Tariff is just multiplied by a generator's capacity (TEC).

The Peak Security, Shared Year Round and Not-Shared Year Round Tariffs do not recover the allowed revenue for transmission networks in Great Britain. Therefore a Residual Tariff is applied which is multiplied by the generator's capacity to recover or refund the difference.

¹<https://www.ofgem.gov.uk/publications-and-updates/project-transmit-decision-proposals-change-electricity-transmission-charging-methodology>

² This is when network investments are made on the basis that they are a more cost-effective option than paying to constrain generation – linked to SQSS modification GSR009.

³ An **Intermittent** generator is one whose primary source of power is not considered controllable, e.g. wind, wave or solar.

⁴ **Annual Load factor (ALF)** = annual running hours of the unit/ 24 hours a day, 365 days of the year (i.e 8,760 hours)

Using the Calculator

To use the charge calculator, you need to input appropriate values from the drop down lists in the orange cells (and where appropriate input to the blue user defined cells) as follows:

1. Select the Generation Charging Zone (please refer to the Appendix for the Generation Charging Zones).
2. Input the Transmission Entry Capacity (TEC) of the generator in MW.
3. Select the Generator Technology from the drop down list. This will populate whether the generator is Conventional or Intermittent.
4. Select the Annual Load Factor for you generator. This can be either the generic load factor for the chosen technology or the specific load factor for your generator. If you have selected Specific then specify the annual load factor in percent in the blue user defined field.
5. Select whether you wish to use National Grid's Residual Tariff or user defined values. If you select user defined then enter the residual tariff in £/kW for each year in the blue user defined fields.

The calculator displays the factors which make up the Indicative Tariff in the "base tariff" column, namely System Peak Tariff, Shared Year Round Tariff, Not Shared Year Round Tariff and Residual Tariff. As explained above, these elements are treated differently depending on the generator and this is shown in the "applicable tariff" column. The Indicative Tariff (£/kW) is the sum of the applicable tariffs. The Indicative Tariff is multiplied by TEC to give the Indicative Charge (£).

Indicative 2016/17 CMP 213 Diversity 1 Tariff Calculator											
2016/17 figures are based on January 2016 Publication, later years on the Feb 2016, 5 Year Forecast.											
	Inputs				User Defined				Applied Values		
	Generation Charging Zone	3								3	
TEC (MW)	100								100		
Technology	CCGT_and_CHP								CCGT_and_CHP		
Conventional/Intermittent									Conventional		
Annual Load Factor (%)	Generic								41.90%		
Residual (£/kW)	User Defined				2016-17	2017-18	2018-19	2019-20	2020-21	1,1,1,1	
	2016-17		2017-18		2018-19		2019-20		2020-21		
	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff	
System Peak Tariff (£/kW)	-2.07	-2.07	-1.68	-1.68	-0.40	-0.40	2.06	2.06	2.22	2.22	
Shared Year Round (£/kW)	8.30	3.48	11.71	4.91	11.85	4.96	10.23	4.29	12.43	5.21	
Not Shared Year Round (£/kW)	7.49	7.49	15.81	15.81	18.61	18.61	21.53	21.53	23.38	23.38	
Residual Tariff (£/kW)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Indicative Tariff (£/kW)	£ 9.90		£ 20.04		£ 24.18		£ 28.88		£ 31.81		
Indicative Charge (£)	£ 990,300.38		£ 2,004,438.66		£ 2,417,841.32		£ 2,887,846.06		£ 3,181,217.66		

NB: Generator technology types which are classified as **intermittent** include: onshore wind, offshore wind, solar, tidal, wave
Generator technology types which are classified as **conventional** include: nuclear, CCGT, CCGT, coal-fired, oil-fired, hydro, pumped storage, CHP, Biomass

Indicative 2016/17 CMP 213 Diversity 1 Tariff Calculator											
2016/17 figures are based on January 2016 Publication, later years on the Feb 2016, 5 Year Forecast.											
	Inputs				User Defined				Applied Values		
	Generation Charging Zone	3								3	
TEC (MW)	100								100		
Technology	CCGT_and_CHP								CCGT_and_CHP		
Conventional/Intermittent									Conventional		
Annual Load Factor (%)	Specific				Enter Relevant Specific ALF Factor in Cell J11						
Residual (£/kW)	User Defined				2016-17	2017-18	2018-19	2019-20	2020-21	1,1,1,1	
	2016-17		2017-18		2018-19		2019-20		2020-21		
	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff	
System Peak Tariff (£/kW)	-2.07	-2.07	-1.68	-1.68	-0.40	-0.40	2.06	2.06	2.22	2.22	
Shared Year Round (£/kW)	8.30	0.00	11.71	0.00	11.85	0.00	10.23	0.00	12.43	0.00	
Not Shared Year Round (£/kW)	7.49	7.49	15.81	15.81	18.61	18.61	21.53	21.53	23.38	23.38	
Residual Tariff (£/kW)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Indicative Tariff (£/kW)	£ 6.42		£ 15.14		£ 19.21		£ 24.59		£ 26.60		
Indicative Charge (£)	£ 642,349.11		£ 1,513,655.33		£ 1,921,419.48		£ 2,459,111.60		£ 2,660,262.80		

NB: Generator technology types which are classified as **intermittent** include: onshore wind, offshore wind, solar, tidal, wave
Generator technology types which are classified as **conventional** include: nuclear, CCGT, CCGT, coal-fired, oil-fired, hydro, pumped storage, CHP, Biomass

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	Inputs	User Defined					Applied Values
Generation Charging Zone	3						3
TEC (MW)	100						100
Technology	Offshore_Wind						Offshore_Wind
Conventional/Intermittent							Intermittent
Annual Load Factor (%)	Specific	Enter Relevant Specific ALF Factor in Cell J11			57.00%		57.00%
Residual (£/kW)	User Defined	2016-17	2017-18	2018-19	2019-20	2020-21	1,1,1,1
		1.00	1.00	1.00	1.00	1.00	

	2016-17		2017-18		2018-19		2019-20		2020-21	
	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff	base tariff	applicable tariff
System Peak Tariff (£/kW)	-2.07	0.00	-1.68	0.00	-0.40	0.00	2.06	0.00	2.22	0.00
Shared Year Round (£/kW)	8.30	4.73	11.71	6.68	11.85	6.75	10.23	5.83	12.43	7.09
Not Shared Year Round (£/kW)	7.49	7.49	15.81	15.81	18.61	18.61	21.53	21.53	23.38	23.38
Residual Tariff (£/kW)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Indicative Tariff (£/kW)	£ 13.22		£ 23.49		£ 26.37		£ 28.36		£ 31.47	
Indicative Charge (£)	£ 1,322,368.47		£ 2,349,085.27		£ 2,636,632.27		£ 2,836,147.90		£ 3,146,743.00	

NB: Generator technology types which are classified as **intermittent** include: onshore wind, offshore wind, solar, tidal, wave
 Generator technology types which are classified as **conventional** include: nuclear, OCGT, CCGT, coal-fired, oil-fired, hydro, pumped storage, CHP, Biomass

Appendix – Generation Charging Zones

Zone	Zone Name
1	North Scotland
2	East Aberdeenshire
3	Western Highlands
4	Skye and Lochalsh
5	Eastern Grampian and Tayside
6	Central Grampian
7	Argyll
8	The Trossachs
9	Stirlingshire and Fife
10	South West Scotlands
11	Lothian and Borders
12	Solway and Cheviot
13	North East England
14	North Lancashire and The Lakes
15	South Lancashire, Yorkshire and Humber
16	North Midlands and North Wales
17	South Lincolnshire and North Norfolk
18	Mid Wales and The Midlands
19	Anglesey and Snowdon
20	Pembrokeshire
21	South Wales & Gloucester
22	Cotswold
23	Central London
24	Essex and Kent
25	Oxfordshire, Surrey and Sussex
26	Somerset and Wessex
27	West Devon and Cornwall

- 400kV Substations
- 275 kV Substations
- 132kV Substations
- 400kV Circuits
- 275kV Circuits
- 132kV Circuits
- Interconnectors

Major Generating Sites Including Pumped Storage

- Connected at 400kV
- Connected at 275 kV
- Hydro Generation

