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05 July 2021

**Consultation on refined residual charging banding in the Targeted Charging Review (TCR)**

Dear Tim,

This response is on behalf of National Grid Electricity System Operator (NGESO) and is not confidential. In the context of electricity charging arrangements, we are responsible for setting Transmission Network Use of System (TNUoS) tariffs and recovering the costs of system balancing actions from all relevant network users. We are also the lead secretariat for Charging Futures which has been established to help make charging more accessible to all interested parties, and in our role as Banding Agent, we calculate and set the band boundaries for all voltage levels across Great Britain.

We are broadly supportive of the approach set out in the consultation, although there are areas where we believe consideration is required of the practicalities of implementation. We cover these at a high level in this cover letter with more detailed information, including answers to the specific questions asked in the consultation in the appendix.

Of the flooring options, we agree with the minded to decision that the 'floor at 0' option should be progressed as this avoids significant market distortions whilst being a practical solution until the outcome of the Access and Forward-Looking Charges Significant Code Review are known.

In respect of the number and type of bands for transmission connected sites, on balance we agree that 4 bands based on consumption is the right option. We do not consider this is not as clear cut as described in the minded-to decision and there are some minor aspects of the banding options that were not explored which we have highlighted further in our detailed answers.

Finally, we fully support and agree with revising the implementation date to April 2023. Not only does this provide industry with additional time to adapt to changes proposed under CMP343 it will allow NGESO sufficient time to implement these changes. Due to the significant amount of time between submission of the CMP343 Final Modification Report on 6<sup>th</sup> October 2020 and a likely date of a decision (expected August 2021), NGESO will no longer be able to implement these changes for April 2022.

We look forward to working with both Ofgem and industry on the detail of how the TCR is implemented in practice and are happy to raise any further supporting code changes if necessary.

If you would like to discuss our response, please contact Grahame Neale at [grahame.neale@nationalgrideso.com](mailto:grahame.neale@nationalgrideso.com) in the first instance.

Yours sincerely,



Jonathan Wisdom

Commercial Codes Manager  
Markets

## **Appendix**

As set out in our cover letter, this appendix contains the detail of our view of the minded-to decision dated 10 May 2021 and answers to the specific questions listed in the consultation.

### **Question 1: Do you agree with our assessment of the distributional impacts of the flooring approaches?**

We agree with your analysis on the distributional impact of the various flooring options, indeed this also aligns with analysis undertaken by the workgroup. We would also add that the ~10% increase in charges between 'no floor' option and 'floored options' is likely to be an underestimate as it will not account for any behavioural changes that may occur if parties are incentivised to consume more energy over Triad rather than to consume less. Whilst we cannot estimate or quantify this behavioural change, our only point of context is the current amount of Triad avoidance (approximately 2GW during 2020/21) which we assume would not occur. Whilst the locational adjustment approach would largely mitigate this distributional impact, we also agree that this approach is not a proportionate solution given the interactions with the Access & Forward Looking Charges SCR and therefore the temporary nature of the solution.

### **Question 2: Do you agree that, of the flooring options presented, flooring at 0 best meets the TCR Principles and Applicable CUSC Charging Objectives?**

We fully agree with Ofgem's analysis and conclusions in relation to the flooring options, the TCR Principles and Applicable CUSC Charging Objectives.

### **Question 3: Do you agree with our assessment of the distributional impacts of the banding approaches?**

We agree with and believe your analysis is consistent with those that undertaken by the CMP343 workgroup.

### **Question 4: Do you agree that, of the banding options presented, four bands best meets the TCR Principles and Applicable CUSC Charging Objectives?**

We mostly agree with your analysis of the impact of the banding options on the TCR Principles and Applicable CUSC Charging Objectives however we believe there are some key elements that are not discussed in the minded-to decision.

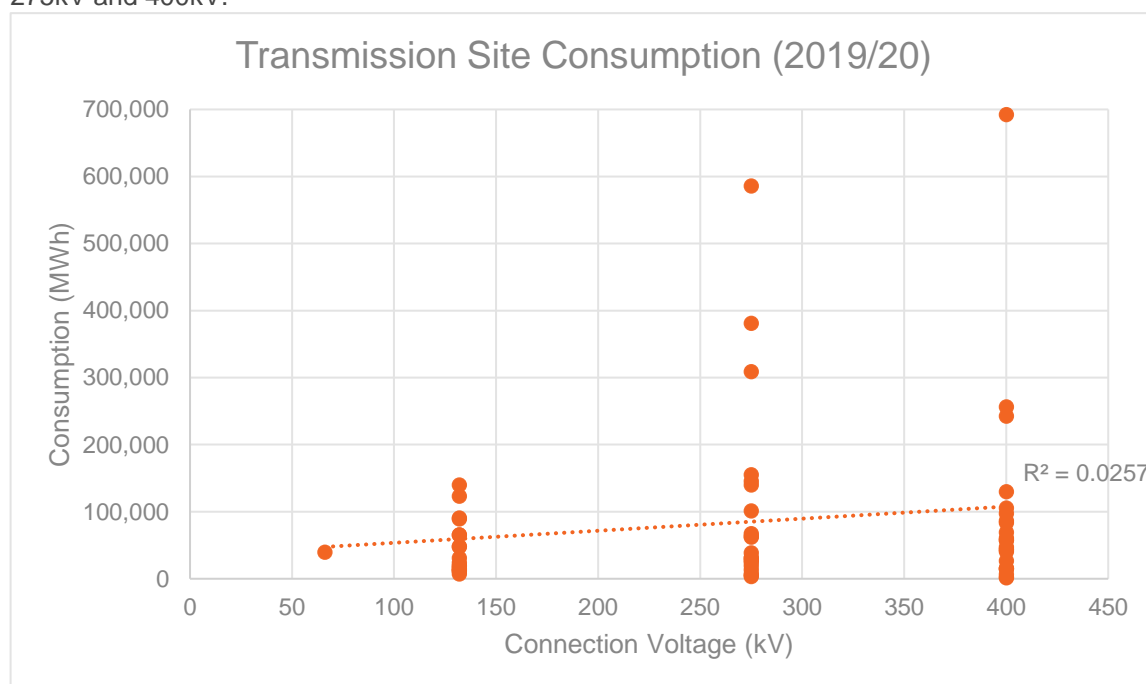
- The analysis of £/MWh for each of the 1, 2 and 4 banding is interesting and highlights that even for the 4 band option, there is a far wider range of charges for transmission connected sites (especially smaller sites) compared to EHV. We believe this shows that a banding approach for transmission connected sites may not be appropriate if this measure is to be used to determine a 'fair' solution due to the varied nature of transmission connected sites. A more suitable approach for transmission connected sites could be a single, flat £/MWh charge which would arguably provide a fairer solution but would also be easier to implement and more economic to maintain given the simpler methodology. Our analysis suggests this would result in a charge of approximately £8.21/MWh<sup>1</sup> based on the following from the 2019/20 financial year<sup>2</sup>;

Total Final Demand Site Volume per annum (A)		260,638,501 MWh
Transmission Connected Final Demand Site Volume per annum (B)		5, 293, 922 MWh
Transmission Connected Final Demand Site Percentage (C)	B / A	2.03%
Total TNUoS Demand Residual Value per annum (D)		£2,140m
Value due from Transmission Connected Final Demand Sites (E)	C * D	£43.5m
Estimated £/MWh charge for Transmission Connected Final Demand Sites (F)	E / B	£8.21/MWh

<sup>1</sup> Based on transmission connected sites being liable for 2.03% of the TNUoS Demand Residual

<sup>2</sup> This is the same dataset used as part of CMP343's analysis

- The challenge with banding transmission connected sites comes down to the fact that they are significantly different in energy usage (100x difference in consumption as per paragraph 3.55 of the minded-to decision) but small in number compared to distribution connected sites. This means that while more bands would seem the logical solution (to group similar users together more), this quickly results in a small number of sites in a band which would make the charges for that band volatile between charging years (as the amount of consumption in that band and so the proportion to total residual charges to be recovered from that band will be more sensitive to changes).
- Whilst the voltage delineation could be seen to introduce a new distortion, it could be also argued to remove a distortion as it allows  $\leq 132$ kV transmission connected sites to be treated in a more similar manner to each other and sites connected to EHV distribution network. For this to align more, we accept that  $\leq 132$ kV connected sites could be further subdivided by percentile however, given the limited number of sites (19 in total), this risks creating instability as mentioned in the point above. Based on the below scatter chart showing consumption vs voltage of transmission connected sites, it is clear that there is little correlation between voltage and consumption but the range of consumption values at 132kV and below is narrower compared to 275kV and 400kV.



Voltage (kV)	Count	Min (MWh)	Max (MWh)	Mean Average (MWh)	Range
$\leq 132$	19	7,194	140,111	46,271	132,917
275	20	3,438	585,972	110,692	582,534
400	23	1,435	692,675	95,691	691,240

- The methodology directed by Ofgem actively discriminates between identical users connected at different voltages. This creates a long-term incentive for sites to reconnect (or for new sites to make connection applications to connect) to voltages that may not be most suitable or readily accessible.

Based on this, we believe it is important for Ofgem to clarify its priorities for determining what is a 'fair' solution and the metrics it will use to determine this.

**Question 5: Do you consider that any of the options presented adequately addresses very small users (including those associated with mixed use sites 4)?**

From the analysis undertaken by the CMP332 (before the modification was withdrawn) and CMP343 workgroups, we believe all of the options have considered 'very small users' and the 2, 4 or voltage-based banding options adequately addresses their needs. We have additional comments in respect of 'very small users' which we have stated later in this appendix.

**Question 6: Do you agree with our minded-to decision to approve CMP343 WACM2?**

As detailed in our answers above, on balance we would support a decision to approve CMP343 WACM 2 but believe simpler and more equitable solutions for transmission connected sites could be developed that do not require banding.

**Question 7: Do you agree with our minded-to decision that implementation should be delayed by a year, until April 2023?**

Yes, we fully support delaying implementation by 12 months to April 2023. In addition to the rationale described in the minded-to decision, NGESO are no longer able to implement CMP343 for the original date (of April 2022). Not revising the implementation date would almost certainly mean that NGESO will not deliver against the TCR direction. Due to unexpected delays in the approval process for CMP343 there is now insufficient time available to deliver the changes from when a CMP343 decision is expected to be made. We have assembled a project team and undertaken discovery work but we cannot develop the solutions further without a formal decision on CMP343.

**Comments in addition to the listed questions**

The following sections provide comments on elements of the minded-to decision that are not explicitly covered by the seven questions above.

**Treatment of 'very small' and 'mixed use' sites.**

We note in the minded-to decision that Ofgem made various statements requesting industry feedback on the proposals for 'very small' sites. Whilst we have provided our opinions in this section, we believe there is a need for Ofgem to more clearly define their expectations and meaning of 'very small sites' and how this relates to existing metrics used in the industry.

As mentioned in the minded-to decision (paragraphs 3.55) and our analysis in response to question 4, the range of consumption values observed with transmission connected sites is very broad. A greater number of bands would help alleviate this to an extent by grouping similar consumers together, however, an exception for 'very small' sites would create additional distortions due to the different treatment of Transmission bands (determined by consumption) to Distribution bands (determined by capacity). Without further clarity from Ofgem of what is meant by 'very small' we have assumed 5GWh per annum. Whilst it is not easy to provide a consumption to capacity conversion due to a number of variables, we have provided some illustrative examples below which shows 5 example sites which have the same 5GWh consumption but different load factors. These sites then have their TNUoS and DUoS network residual charges calculated for each voltage tier:

	Arithmetic	Example 1	Example 2	Example 3	Example 4	Example 5
Consumption (MWh)	A	5,000	5,000	5,000	5,000	5,000
Avg Consumption per Hour (MWh)	$B = A / (365 * 24)$	0.57	0.57	0.57	0.57	0.57
Load Factor (%)	C	10%	25%	50%	75%	90%
Capacity (MW)	$D = B / C$	5.71	2.28	1.14	0.76	0.63
Power Factor	E	0.95	0.95	0.95	0.95	0.95
Capacity (MVA)	$F = D / E$	6.01	2.40	1.20	0.80	0.67
<b>Capacity (KVA)</b>	<b><math>G = F * 1000</math></b>	<b>6,008.17</b>	<b>2,403.27</b>	<b>1,201.63</b>	<b>801.09</b>	<b>667.57</b>

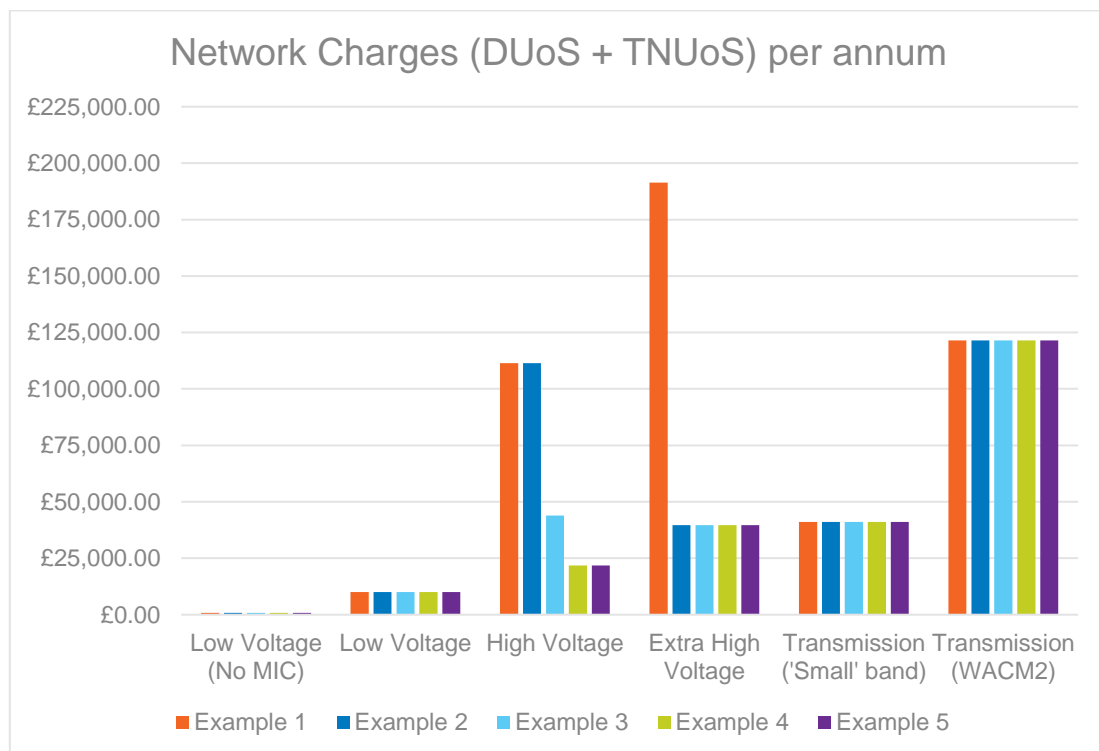
Voltage Tier		Example 1	Example 2	Example 3	Example 4	Example 5
Low Voltage (No MIC)	Band Allocation	Band 4	Band 4	Band 4	Band 4	Band 4
	Avg DUoS charge (£/Site/Year)#	£381.46	£381.46	£381.46	£381.46	£381.46
	TNUoS charge (£/Site/Year)*	£488.00	£488.00	£488.00	£488.00	£488.00
Low Voltage	Band Allocation	Band 4	Band 4	Band 4	Band 4	Band 4
	Avg DUoS charge (£/Site/Year)#	£4,355.87	£4,355.87	£4,355.87	£4,355.87	£4,355.87
	TNUoS charge (£/Site/Year)*	£5,635.00	£5,635.00	£5,635.00	£5,635.00	£5,635.00
High Voltage	Band Allocation	Band 4	Band 4	Band 3	Band 2	Band 2
	Avg DUoS charge (£/Site/Year)#	£43,112.82	£43,112.82	£17,845.53	£9,093.44	£9,093.44
	TNUoS charge (£/Site/Year)*	£68,297.00	£68,297.00	£26,067.00	£12,708.00	£12,708.00
Extra High Voltage	Band Allocation	Band 2	Band 1	Band 1	Band 1	Band 1
	Avg DUoS charge (£/Site/Year)	£35,253.55	£9,206.75	£9,206.75	£9,206.75	£9,206.75
	TNUoS charge (£/Site/Year)*	£156,057.00	£30,398.00	£30,398.00	£30,398.00	£30,398.00
Transmission	Band Allocation	'Small'	'Small'	'Small'	'Small'	'Small'
	TNUoS charge (£/Site/Year)^	£41,053.34	£41,053.34	£41,053.34	£41,053.34	£41,053.34
Transmission	Band Allocation	Band 1	Band 1	Band 1	Band 1	Band 1
	TNUoS charge (£/Site/Year)*	£121,497.00	£121,497.00	£121,497.00	£121,497.00	£121,497.00

\* Assuming WACM2 approved

^ Based on creating 1 new transmission site with 5GWh consumption in a separate band

# Mean average of DNO's charges for 2022/23

The above table is summarised in the below chart.



This above analysis shows that the difference between consumption banding (for transmission) and capacity banding (for distribution) creates an incentive for low load-factor sites to reconnect on the transmission network to reduce their network charges. Whilst this distortion exists under all options presented under CMP343, it becomes more prevalent as TNUoS charges decrease. The introduction of a 5GWh 'small' band extends this distortion to a wide range of HV connected sites whilst maintaining 4 bands under WACM 2 only presents this distortion to EHV connected sites with

the lowest load factors. We have repeated this analysis to simulate a 1GWh 'small' band and found that this distortion still exists and also extends to Low Voltage sites (i.e. low load factor, Low Voltage sites would face cheaper network charges being transmission connected compared to distribution connected); we can provide this analysis if required and the methodology is identical to above.

An exception for small users that introduced another means of charging (such as a £/MWh for very small sites) separate to a banded approach for all other users would also introduce a new distortion as there is no clear justification to discriminate users based on an arbitrary definition of a very small site. More generally, we would question whether it is more efficient for a 'very small' site to connect to the transmission network if their connection can be facilitated to the distribution network which suggests drivers other than network charges are resulting in a request for a transmission connection.

### **Data concerns**

We have concerns that the changing implementation date for the TNUoS Demand Residual (from April 2021 to April 2022 to potentially April 2023) has led to a sub-optimal design for industry data. The use of Line Loss Factor Classes (LLFCs) in the pursuit of a fast implementation has placed significant restrictions on the ability of industry to develop holistic solutions which would allow NGESO, or any other party, to independently validate data that will be used in the TNUoS methodology. This will result in;

- A potential inability for NGESO to meet compliance requirements in respect of the source and data quality used in the TNUoS methodology. This is because we have no means to independently validate the data provided by DNOs under the approved P402 solution with no independent assurance activity outside of the DNO's internal controls. We must assume it is accurate without any means to prove this.
- Negative impact on Customer and Stakeholder satisfaction as a result of mismatched expectations given the limitations on the data with which we will be provided and the slow timescales for provision of this data. For instance, we currently receive all data for TNUoS billing at the II (Interim Information) settlement run however under P402 for the TNUoS Demand Residual, this data will only be received at SF (Initial Settlement Run) plus 1 month and so will be significantly slower than other processes.
- In addition, we fully expect we will not be able to answer a significant number of questions related to the TNUoS charges for distribution connected sites. This is because we will not be able to confirm what charge any site is actually paying as we will not be receiving site level data under P402 (we can only confirm what they should be paying) and are dependent upon DNOs to update their data to reflect any changes should a site be in an incorrect band.

We hope that under the Market Wide Half Hourly Settlement Programme these data provisions can be dramatically enhanced, however, we have concerns in the interim whilst solely depending upon the approved P402 solution.

### **Process complexity concerns.**

In addition to the above concerns regarding data, this is compounded by the growing complexity and expectation of the TNUoS methodology. We have concerns that as the methodology becomes more complicated, using data for which we have no verification ability for, there could be a mismatch of expectation. We would welcome discussions of how NGESO and Ofgem can work together to ensure that CUSC processes are adhered to by industry as the methodology continues to grow in complexity.