

Code Administrator Consultation Response Proforma**CMP357 'To improve the accuracy of the TNUoS Locational Onshore Security Factor for the RII02 Period'**

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses to cusc.team@nationalgrideso.com by **5pm on 19 January 2021**.

Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Panel.

If you have any queries on the content of this consultation, please contact Paul Mullen Paul.J.Mullen@nationalgrideso.com or cusc.team@nationalgrideso.com

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CMP357**For reference the Applicable CUSC (charging) Objectives are:**

- That compliance with the use of system charging methodology facilitates effective competition in the generation and supply of electricity and (so far as is consistent therewith) facilitates competition in the sale, distribution and purchase of electricity;*
- That compliance with the use of system charging methodology results in charges which reflect, as far as is reasonably practicable, the costs (excluding any payments between transmission licensees which are made under and accordance with the STC) incurred by transmission licensees in their transmission businesses and which are compatible with standard licence condition C26 requirements of a connect and manage connection);*
- That, so far as is consistent with sub-paragraphs (a) and (b), the use of system charging methodology, as far as is reasonably practicable, properly takes account of the developments in transmission licensees' transmission businesses;*
- Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency *; and*
- Promoting efficiency in the implementation and administration of the system charging methodology.*

**Objective (d) refers specifically to European Regulation 2009/714/EC. Reference to the Agency is to the Agency for the Cooperation of Energy Regulators (ACER).*

Please express your views in the right-hand side of the table below, including your rationale.

CMP357 Standard Consultation questions		
1	Do you believe that the CMP357 Original Proposal, WACM1 or WACM2 better facilitates the Applicable (Charging) Objectives?	<p>When analysing the Original Proposal, WACM1 or WACM2 against the baseline, it is crucial to set out what the baseline currently is. The CUSC states that before the start of each price control, the ESO must recalculate the Locational Security Factor (SF), and the recalculated number will apply for the duration of the price control. It does not state the number of decimal places (dps) the Locational Security Factor should be calculated to. The calculated number is set out in the Charging Statements. The ESO has an obligation to ensure that System Charges are cost reflective. The ESO originally reported the recalculated SF to 4dp to industry at the TCMF in September 2020, for each of the five years of the forthcoming price control period. This was then averaged across the five years and rounded up by the ESO to 1dp which does not meet this obligation.</p> <p>Following discussions with industry at the TCMF meetings, the ESO decided to consult in mid-November 2020 on the number of dps for the (locational) SF to use in setting TNUoS tariffs in the next price control period because they clearly felt that setting the SF to 1dp was inappropriate and they were not legally obliged to do so. As soon as the ESO started these discussions with Industry, the expectations were that the SF would be set to more than 1dp. This is a chronology of the ESO's communication with Industry:</p> <p>September 2020 - asked stakeholders whether the SF should be set to 1 or 8 dps.</p> <p>November 2020 – ESO said they were minded to set the SF to 2 dps before going out to consultation.</p> <p>December 2020 – consultation closed – majority favour setting the SF to more than 1dp..</p> <p>December 21st - ESO announced that they would set the SF to 1dp, but that 2dp was their preferred number of dps at which to set the SF.</p> <p>The ESO indicated in their response to industry that they will seek to change the SF to 2dps during 2022, which was their preferred baseline. To change the SF mid price control will require a separate modification to be raised, and Ofgem's decision cannot be known, creating uncertainty. A potential future modification therefore cannot and should not be taken into consideration as part of the decision on CMP357 and should not have been discussed in the consultation</p>

response. The ESO should have set the SF to the number of dps they intended and which they considered to be the preferable baseline long term.

The ESO are obligated to adhere to their licence conditions and charging objectives. By setting the SF to 1dp arbitrarily, the ESO have ignored good practice whereas applying a number of dps greater than 1dp would have shown better practice. This ambiguity needs to be removed to avoid this situation arising again and ensure good practice is adhered too.

Original Against the Baseline

In summary (with detailed comments under question 3.)

(a) facilitating effective competition

Positive.

The proposal improves the effectiveness of competition in generation as it demonstrably increases the accuracy of TNUoS charges paid by Users who pay a more appropriate charge than would otherwise be the case. This reduces the potential for unduly increased or reduced tariffs, which would adversely affect competition. This proposal also removes uncertainty in the number of decimal places which may be applied.

(b) resulting in cost-reflective charges

Positive.

The proposal promotes greater accuracy of the Locational Security Factor and this will improve the cost-reflectivity of the value of the security factor. The Original Proposal removes any subjectivity and locks in a more cost reflective number. Subjectivity is detrimental to predictability. Please note that there are no additional costs to the ESO or Users of applying 8dps in terms of System changes which can be compared to the clear improvements to the cost reflectivity of TNUoS tariffs paid by Users.

(c) properly takes account of developments in TOs' transmission businesses

Neutral.

(d) being compliant with EU regulations

Positive.

It is a legal requirement of Directive 2009/72(EU) Recital 36 that transmission tariffs in GB "are non-discriminatory and cost-reflective". This proposal, by ensuring more accurate transmission tariffs are in place in GB for the forthcoming Price Control period, will mean the that compliance with Electricity Regulation and any relevant legally binding

decision etc. (in terms of the duties placed upon the NRA – Ofgem - in Article 37(1)(a) according to Recital 36) is achieved. Without accurate transmission tariffs, there will be (i) discrimination in those tariffs (as some will pay more and some less than they should for no justified reason) and (ii) they will not be accurately cost-reflective if they are to 1dp (WACM1) or 2dp (WACM2) when compared with 8dp (the Original Proposal).

(e) Promoting efficiency in the implementation and administration of the system charging methodology

The proposal is more efficient as it reduces the level of rounding that is required to be calculated.

WACM1 against the Baseline

- a) **Negative:** Setting the SF to 1dp hardcodes an approach that is clearly not cost reflective and has the potential to lead to future step changes in tariffs of over 5% for changes in underlying modelled security of less than 0.000001%. For example, the difference between rounding to 1dp from 1.75000001 to 1.8 and from 1.74999999 to 1.7 is substantial and a feasible scenario. Using 1dp unnecessarily creates winners and losers. As the network and therefore Locational tariffs are expanding due to the Expansion Constant and the changing generation and supply mix, the SF is now having a more material affect than previously. The SF is part of the calculation of TNUoS tariffs, and applying it to 1dp only locks in uncertainty which has a differing material impact on parties, especially those at the extremities of the charging zones. This obviously cannot be beneficial for competition which ultimately is negative for the end consumer, and GB's aspirations for Net Zero as accommodating uncertainty requires risk premiums being applied (which drives up the cost to end consumers).
- b) **Negative:** For the avoidance of doubt, and as expressed to the Workgroup on a number of occasions, the CMP357 proposal CMP357 does **not** seek to change how the SF is calculated and this is not part of the defect. The aim of CMP357 is to better align the SF with the underlying data. Setting the SF to 1dp is clearly detrimental to the cost reflectiveness of the SF as evidenced by the process this year. Using 1dp arbitrarily pushes costs onto a certain set of Parties whilst rewarding another set of Parties. This can quite easily change with the inverse happening at the next Price Control. When setting TNUoS tariffs, the inputs

listed below are either calculated or the information is provided by the TOs/DNOs to more than 1dp. In the case of information provided by the TOs/DNOs, the information provided also includes future forecasts. For example, when finalising tariffs for the next charging year, the ESO will use a list of circuits provided by the TO, which will include circuits not yet completed, but which will be expected to be in operation for the winter peak. The information provided is to 2dps.

- Expansion Factors 13dps
- Expansion Constants 13dps
- WACC 2dps
- ALFs 4dps (Both Specific and Generic)
- Circuit Parameters 2dps

The resulting TNUoS tariffs are then calculated to 6dps.

The SF is also calculated using the same inputs (to multiple dps) as TNUoS tariffs but will be expressed to 1dp then used as an input to subsequently alter TNUoS tariffs. Therefore the SF being expressed to 1dp is an anomaly.

c) Neutral

- d) **Negative:** It is a legal requirement of Directive 2009/72(EU) Recital 36 that transmission tariffs in GB "are non-discriminatory and cost-reflective". Setting the SF to 1dp when you know that this is materially different to the actual number could be argued to be discriminatory as there is no basis on which to do this. It is clearly not cost reflective.

e) Neutral

WACM2 against the Baseline

Our reasoning is the same as for the Original against the Baseline, as there is clearly a large increase in cost reflectiveness, and a reduction in uncertainty moving from 1dp to 2dp. However, moving to 8dps (the Original), as evidenced in the workgroup, further improves against the Baseline compared to WACM2.

- a) Positive**
- b) Positive**
- c) Neutral**
- d) Positive**
- e) Neutral**

2	Do you support the proposed implementation approach?	Yes, we support implementation of this change to the tariffs to apply from the start of the forthcoming charging year (2021/22) starting 1 st April 2021, and for the full duration of the price control. The change proposal is about improving the accuracy of the Security Factor as of the start of the new price control. We do not support a phased introduction of the change, the process for which would create delay and extend the uncertainty about this measure as this would lead to detrimental impacts on both competition and cost reflectivity.
3	Do you have any other comments?	<p>Our additional comments are as follows:</p> <p><i>On the ongoing practice of rounding</i></p> <p>In the autumn of 2020 the ESO advised industry that one decimal place would be used for the Security Factor, based on their assumption (false in our view and others) that industry was happy with this level of accuracy. We disagree that industry was in fact content, and this was clearly demonstrated when the ESO put the issue to industry in the autumn of 2020. Following expressions of discontent at the TCMF in September, the ESO was prompted to more formally consult on the issue in November 2020. This resulted in 13 response, of which the majority favoured the use of eight decimal places (8dps).</p> <p>We also note that in the 2004 Charging Statement which was cited in the Workgroup Consultation, explicit mention was made of rounding for the Expansion Factor, but not for the SF. In our view, this highlights an inconsistency of practice rather than an argument in support of it continuing <i>ad infinitum</i>. The 2004 charging statement illustrates that the Security Factor is used with an Expansion Constant that is expressed to 2 dps or 4 Significant figures to produce a result that while it is shown to 2 dps in the charging statement is actually expressed in tariffs to 6 dps or 8 Significant Figures (reference – p13, 2004 charging statement).</p> <p><i>On the margin calculation</i></p> <p>The Workgroup discussed whether the line of best fit should be forced to go through the point of Origin by removing the intercept. The purpose of this discussion was to challenge the accuracy of the line of best fit and potentially imply that the actual calculation of the Security Factor was therefore subjective.</p> <p>Removing the intercept forces the regression line-of-best-fit to go through zero, rather than allowing the line to fit the actual data. This should only be done if the data confirms</p>

that there will be always be an x which equals zero, and when x equals zero, y must also always equal zero.

In the Transport Model used to prepare the November 2020 draft tariffs, out of 953 nodes on the system, no node had zero MW/km. As we now have a reference node based on distributed demand, it would be a statistical fluke for an actual node to have zero MW/km for one year (i.e. to be perfectly placed in the centre of the system). With changing generation, demand and network topology, the following year the MW/km that node then may move away from zero. Therefore, there is no guarantee that there will be an x which equals zero. The process then compares MW/km for a secure system. Logically it makes no sense at all to assume that when $x = \text{zero}$, then y must also equal zero, as the modelling removes circuits, therefore increasing flows.

Removing the Intercept does not always negatively reduce R^2 and in some cases can improve the R^2 by reducing the errors. In terms of the SF, the reason why R^2 didn't reduce much by removing the intercept is based on the fact that naturally you will have nodes with minimal MW/km and ~ 0.7 to 0.9 on top of that will also come close to zero. Therefore, the fact that R^2 didn't significantly reduce is due to the relationship between x and y.

If done inappropriately, removing the line of intercept might be considered as data manipulation. For example, the methodology was considered by the Workgroup for CMP213. The discussions showed that removing the intercept (as some on the Workgroup have suggested) has no mathematical basis and the methodology behind the calculation of the SF is not part of the defect. We therefore believe suggestions to force the intercept of the Secure to Non Secure best fit line to (zero,zero) should be ignored. Further comments on our Original

Objective (a) – facilitating effective competition

The ESO have identified tariff predictability, tariff stability and cost reflectiveness as assessment criteria for the defect in their view for this consultation (although it was not the criteria they applied when they issued their own consultation back in November). Therefore, we have examined these components in our response as to whether this modification is better than baseline against the objectives.

Tariff stability

The review of the SF for each price control has been long

established and, therefore, a change is entirely possible if the outturn numbers warrant it. Therefore, stability is not a foregone conclusion or legitimate expectation on the part of Users.

Furthermore, we do not agree that rounding the Security Factor (SF) to 8 decimal places (dps) creates instability, but rather that fixing the SF for the duration of the price control creates stability. When presented to 3dp+, the SF for the next price control is very close to 1.751. If for the next price control, the SF reduced marginally, e.g. to 1.749, then using the approach of rounding to 1dp, the SF would be rounded to 1.7. Rounding to 1dp can therefore exaggerate change and create an unwarranted and irrational step change in the SF and resulting tariffs, and create instability, even when the SF may have changed very little in value before being rounded. In this example a 0.114% change in the calculated SF would create a 5.6% change in the utilised SF.

Objective (b) – cost reflectivity

As set out above (objective (a)), rounding to 1dp either exaggerates or prevents change which is clearly at the expense of accuracy and hence cost reflectivity.

Accuracy and good practice

Modelling in SECULF requires the same inputs as those for tariff setting and the five-year forecast, i.e. Contracted TEC, Peak demand from the Wk24 data provided by DNOs, and the Network Topology from each TO as shown in the Electricity Ten Year Statement. This same data is also used by the System Operators to plan the future system and justify investment through the Network Options Assessment (NOA) as well as to set Price Control Allowed Revenues. The input data for next year is now fixed and the same as those used to set TNUoS tariffs.

The SECULF model calculates a MW/km value to 13dps for each node, for each year for an intact network as well as for a secure network again. A line of best of fit is then produced to a high level of accuracy (at $R^2 = 0.9946$ as per the ESO's analysis for 2021/22, at p.10 in the consultation document). Therefore, detailed calculations to numerous dps are used throughout the input process when calculating the SF, using transparent data inputs used in other Industry processes.

The accuracy of the ultimate purpose of the SF is unnecessarily reduced in the middle of this process by rounding to 1dp before being used in a calculation where the

result is expressed to six dps. It is unclear why rounding took place and the extent to which it affected the result. It is also important to point out that the ESO has, despite being asked, has been unable to show the evidence of previous rounding.

The CUSC does not require the NGESO to undertake this rounding, and although previous SFs have been quoted to 1dp, it is unclear why rounding took place and the extent to which it affected the result. We are, however, clear that rounding to 1dp would have a significant and material effect on tariffs for the duration of the next price control.

This will have a direct and material impact on us as payers of TNUoS charges for our generation projects across GB but particularly in Scotland where, for example, in Zone 1 (where we have a number of generation projects located) we and other generation users would be expected to pay in the region of £54.22M if the SF were to be expressed to 1dp. This compares with circa £53.08M if it were to be expressed to 2dps and, if the SF were to be expressed to 8dps it would be approximately £52.94M.

In other words, for one (of the 27) charging zones, Users would pay circa £1.28M (or 2.41783151%) more in TNUoS if 1dp rather than 8dps were to be used to express the SF (everything else being equal). In our view, there is no rational justification for not expressing the SF to 8dps given the distortive effect from a change (expressing to 8 decimal places rather than 1) that cost nothing to undertake.

In this regard it is also important to recognise that as outlined, another key parameter reviewed for each price control, the Expansion Constant, is calculated by the ESO to 8dp, and final TNUoS tariffs (which rely, in part, on the application of the SF) are expressed to 6dp. Using 1dp is therefore inconsistent with other inputs and outputs. Moving to 8dp is therefore a rational change which removes that inconsistency and clearly improves the cost reflectivity of TNUoS tariffs paid by Users.

It is also important to note that there has been a trend of the SF reducing since its inception. In 2004, for England and Wales only, the SF was set at 1.9. When Scotland was introduced into the model as part of BETTA, the SF immediately reduced to 1.8 and since then, with the changes in network build associated with Connect & Manage and other Ofgem / BEIS approved initiatives the level of security (for which the SF is a proxy) has reduced further, especially in Scotland.

Allowed Revenues for 13/14 from the Five-year forecast¹ and Allowed Revenues for 21/22 from the November draft² are shown in the table below.

	13/14		21/22	
NGET	1587		NGET	1919.9
SHET	172		SHET	390.6
SPT	271	443	SPT	539.7
	2030	22%	2850.2	33%
			930.3	

We can see a large percentage rise in Scottish Allowed Revenues as a proportion of overall Allowed revenues. The change in the SF between 2004 (1.9) and 2005 (1.8) indicates that Scotland had a lower redundancy than the rest of GB in 2005. When coupled with the change in Allowed Revenues between 2013/14 and 2021/22 we would expect the SF to reduce for this forthcoming Price Control.

This aligns with the move to the UK Government's Net Zero goals and the connection of a number of small (in terms of their proportion to conventional) intermittent generation. Circuit outages, etc. are therefore less likely to cause a loss of supply of 1500MW or unacceptable frequency conditions.

A reduced SF below 1.8 for the forthcoming Price Control period will have better reflected actual transmission investment and the increased number and variety of Balancing Services Providers available to the ESO.

It would therefore have been surprising to see no change in the SF as a result of the ESO's review ahead of the RIIO-T2 price control. This is especially as we have seen a substantial change in the Charging Methodology since 2012 (Project Transmit), and the introduction of the economy background into the SQSS and the SECULF model, which will be incorporated into the model the SF calculation was based on for this year.

If there is uncertainty in how the SF is calculated and what drivers can increase or decrease the Security Factor, the ESO can aid this by providing more transparency in the calculation process and potentially share the SECULF model with industry. Transparency is not supported by reducing the accuracy and cost reflectiveness of the Security Factor by using 1dp.

¹ <https://www.nationalgrid.com/sites/default/files/documents/5772-Initial%20View%20of%20Network%20Use%20of%20System%20%28TNUoS%29%20tariffs%20from%202013-14%20to%202017-18.pdf>

² <https://www.nationalgrideso.com/document/181956/download>

We believe that the ESO should be able to provide much more clarity to industry about the driver of change in the SF, as the inputs to the SECULF model are the same as the inputs to the DCLF model, and a comparison can be made by stakeholders with previous SECULF models and between years. It would be far better to use a cost reflective 8dps, and the ESO then immediately work towards providing a commentary to industry explaining the change in the SF similar to TNUoS tariffs.

Without greater transparency about the derivation of the SF, stakeholders are less able to assess whether the actual calculation process might have resulted in spurious accuracy.

Distributional impacts

Without the proposed change, generators from the Midlands northwards will be paying more for redundancy in their TNUoS tariffs, and generators in the South will be paid more via TNUoS tariffs for the consequences of redundancy which does not exist in reality.

Rather than considering that there will be 'windfall' winner and losers resulting from whether CMP357 is approved or not, it is more instructive to see that the Original proposal (and to a lesser extent WACM2) better aligns TNUoS Tariffs to the likely incremental cost of additional transmission investment.

Predictability

The ESO discussed the SF at the requisite industry group (TCMF) and consulted on the way ahead. If rounding to 1dp was (as is being suggested by some Workgroup members) standard practice and predictability the overarching driver, there would have been no need for the ESO to go out to consultation in November 2020 as it did.

Through their transparency, the ESO highlighted a defect (which may have existed in previous calculations unbeknown to industry) which the majority of industry respondents to the consultation supported removing, by moving to a greater number of decimal places. The ESO did not announce their conclusions (into their consultation) until 21st December 2021, and this modification (CMP357) was subsequently raised the next day. Industry therefore could not have predicted with any certainty what the SF would be for 2021/22 until just before Christmas.

The SF has not always been at 1.8. It was 1.9 in 2004/5, so change does happen. It is not a fixed constant. It was clear when the security factor calculation for 2021/22 was first announced to industry stakeholders in the September 2020 TCMF that there was uncertainty whether 1 or more dps would be used. The ESO could not and has not to date

provided any evidence that rounding to 1 dp was “custom” for this calculation. The claim that 1 dp is the more stable outcome is not supported by the indication given by the ESO at the November 2020 TCMF that the SF would be expressed to 2 dps

We would like to compare the ESO’s approach taken in respect of CMP326 at the 15th January 2020 Workgroup meeting where the ESO has argued that their proposal had merit even though the savings were very small (~£40k per annum, but this may well grow) as:

....it was good in principle (for the ESO) not to be paying (the generator) for something (the frequency response) that is not being fully delivered (by the generator).

The adoption of this principle should also hold in the context of CMP357. That is to say, the generator should not be given a cost signal relating to a cost that is not being delivered. However, adoption of this principle is substantially more material for CMP357, running to millions of pounds per annum, than it was for CMP 326, tens of thousands of pounds.

The following analysis highlights the differing impacts of 1dp, 2dps, and 8dps. Moving from 2dps to 8dps clearly makes a material difference to Northern Generation.

	1 d.p	2 d.p	8 d.p
Total collected from Generation (£m)	412.5	405.6	404.5
Total collected from Demand (£m)	2,596.5	2,602.7	2,603.6
Total collected from Generation vs. Demand	15.89%	15.58%	15.54%

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Generation tariffs		SF = 1 decimal place					SF = 2 decimal places					SF = 8 decimal places					Change in total revenue recover	
Zone	Zone Name	PS (£m)	YRS (£m)	YVNS (£m)	Residual (£m)	Total (£m)	PS (£m)	YRS (£m)	YVNS (£m)	Residual (£m)	Total (£m)	PS (£m)	YRS (£m)	YVNS (£m)	Residual (£m)	Total (£m)	Moving from 1 4 p to 2 p	Moving from 2 4 p to 8 p
1	North Scotland	1.88	16.76	35.54	(0.06)	54.22	1.94	16.39	34.75	-	53.08	1.90	16.35	34.68	-	53.94	(1.15)	(0.14)
2	East Aberdeenshire	3.62	10.65	27.08	(0.08)	40.89	3.73	9.83	26.47	-	40.03	3.72	9.80	26.41	-	39.95	(0.65)	(0.16)
3	Western Highlands	0.81	3.71	9.54	(0.01)	14.06	0.79	3.63	9.33	-	13.76	0.79	3.62	9.31	-	13.72	(0.30)	(0.04)
4	Stye and Lonsdale	-	0.26	0.05	(0.00)	1.11	-	0.26	0.03	-	1.00	-	0.26	0.02	-	1.00	(0.52)	(0.06)
5	Eastern Grampian and Tayside	0.65	9.67	25.54	(0.04)	35.81	0.63	9.45	24.97	-	35.06	0.63	9.43	24.91	-	34.97	(0.75)	(0.09)
6	Central Grampian	0.28	0.42	1.07	(0.00)	1.76	0.27	0.41	1.04	-	1.72	0.27	0.41	1.04	-	1.72	(0.04)	(0.00)
7	Argyll	0.04	0.85	4.38	(0.00)	5.14	0.04	0.83	4.18	-	5.05	0.04	0.83	4.15	-	5.09	(0.11)	(0.01)
8	The Trossachs	2.01	0.59	1.69	(0.01)	4.27	1.96	0.58	1.65	-	4.19	1.96	0.57	1.65	-	4.18	(0.08)	(0.01)
9	Strathgairn and Fife	0.33	0.81	0.96	(0.00)	2.10	0.32	0.80	0.94	-	2.06	0.32	0.79	0.94	-	2.08	(0.04)	(0.01)
10	South West Scotland	3.53	14.81	33.48	(0.07)	55.24	2.96	14.43	32.72	-	50.19	2.95	14.44	32.64	-	50.03	(1.07)	(0.13)
11	Lothian and Borders	3.75	20.19	19.50	(0.00)	43.36	3.66	19.74	19.08	-	42.48	3.65	19.69	19.01	-	42.36	(0.88)	(0.11)
12	Seisney and Cheviot	-	1.32	3.38	(0.01)	4.68	-	1.29	3.30	-	4.60	-	1.29	3.29	-	4.58	(0.09)	(0.01)
13	North East England	6.96	7.15	7.01	(0.06)	21.87	6.81	6.99	6.85	-	20.65	6.79	6.97	6.84	-	20.60	(0.41)	(0.05)
14	North Lancashire and The Lakes	6.46	16.05	5.21	(0.12)	27.63	6.34	15.70	5.09	-	27.13	6.32	15.66	5.08	-	27.06	(0.50)	(0.07)
15	South Lancashire, Yorkshire and Humbers	32.44	15.19	2.74	(0.31)	50.66	31.12	14.60	2.68	-	48.34	31.63	14.81	2.67	-	49.11	(0.81)	(0.13)
16	North Midlands and North Wales	41.37	5.08	-	(0.37)	46.87	40.45	4.97	-	-	45.42	40.34	4.96	-	-	45.30	(0.66)	(0.12)
17	South Lancashire and North Norfolk	4.41	3.38	-	(0.16)	7.63	4.31	3.30	-	-	7.61	4.30	3.29	-	-	7.59	(0.02)	(0.02)
18	Mid Wales and The Midlands	11.00	6.32	-	(0.24)	17.08	10.76	6.18	-	-	16.93	10.73	6.16	-	-	16.89	(0.14)	(0.04)
19	Anglesey and Snowdon	8.82	0.31	-	(0.05)	9.88	8.82	0.31	-	-	9.83	8.80	0.31	-	-	8.91	(0.15)	(0.02)
20	Pembrokeshire	16.79	19.87	-	(0.08)	6.86	16.41	19.66	-	-	6.39	16.37	19.63	-	-	6.14	(0.09)	(0.02)
21	South Wales & Gloucester	6.97	(4.35)	-	(0.00)	2.66	6.81	(4.28)	-	-	2.66	6.80	(4.25)	-	-	2.66	0.00	(0.01)
22	Colwyn	2.88	1.51	(0.02)	(0.03)	0.73	2.82	1.47	(0.04)	-	0.79	2.81	1.47	(0.04)	-	0.74	0.02	(0.06)
23	Central London	(0.14)	0.00	(0.00)	(0.00)	(0.66)	(0.53)	0.00	(0.00)	-	(0.53)	(0.53)	0.00	(0.00)	-	(0.53)	0.02	0.00
24	Essex and Kent	(29.37)	15.25	-	(0.26)	(14.38)	(28.72)	14.91	-	-	(13.81)	(28.65)	14.87	-	-	(13.77)	0.58	0.04
25	Oxfordshire, Surrey and Sussex	(1.84)	(1.93)	-	(0.00)	(3.85)	(1.80)	(1.80)	-	-	(3.78)	(1.80)	(1.80)	-	-	(3.77)	0.15	0.01
26	Somerset and Wiltshire	(5.37)	(5.19)	-	(0.00)	(10.62)	(5.25)	(5.07)	-	-	(10.32)	(5.24)	(5.06)	-	-	(10.30)	0.30	0.03
27	West Devon and Cornwall	(2.71)	(2.62)	-	(0.03)	(5.36)	(2.60)	(2.56)	-	-	(5.26)	(2.64)	(2.63)	-	-	(5.30)	0.15	0.01
Total across all zones		114.63	125.73	374.18	-3.24	413.38	112.30	123.84	170.31	-	405.51	112.01	122.61	169.87	-	404.51	6.97	1.06

Demand tariffs		SF = 1 decimal place				SF = 2 decimal places				SF = 8 decimal places				Change in total revenue recovery	
Zone	Zone Name	HH (£m)	NHH (£m)	Embedded Export Tariff (£m)	Total (£m)	HH (£m)	NHH (£m)	Embedded Export Tariff (£m)	Total (£m)	HH (£m)	NHH (£m)	Embedded Export Tariff (£m)	Total (£m)	Moving from 1 d.p. to 2 d.p. (£m)	Moving from 2 d.p. to 8 d.p. (£m)
1	Northern Scotland	9.01	20.63	-	29.64	9.37	21.45	-	30.82	9.41	21.55	-	30.96	1.18	0.14
2	Southern Scotland	35.78	63.76	-	99.54	38.52	64.07	-	102.59	38.81	64.22	-	103.03	2.05	0.25
3	Northern	43.51	61.55	-	105.06	43.86	62.05	-	105.91	43.91	62.11	-	106.02	0.85	0.11
4	North West	70.82	120.34	-	191.16	71.09	120.81	-	191.91	71.13	120.88	-	192.01	0.75	0.10
5	Yorkshire	76.68	109.00	-	185.68	77.18	109.39	-	186.54	77.19	109.44	-	186.64	0.66	0.09
6	N Wales & Mersey	51.32	77.08	-	128.40	51.48	77.32	-	128.80	51.51	77.35	-	128.86	0.41	0.06
7	East Midlands	94.01	150.75	0.74	244.02	94.17	151.00	0.74	244.43	94.28	151.05	0.75	244.50	0.41	0.07
8	Midlands	88.47	142.45	0.79	227.43	88.55	142.60	0.79	227.37	88.57	142.63	0.79	227.41	0.24	0.05
9	Eastern	117.48	231.93	2.86	346.81	117.58	232.14	2.86	347.44	117.60	232.18	2.86	347.21	0.33	0.07
10	South Wales	45.24	55.88	1.96	99.15	45.24	55.88	1.94	99.19	45.25	55.89	1.93	99.20	0.03	0.01
11	South East	66.51	153.94	1.93	218.52	66.50	153.92	1.90	218.52	66.51	153.93	1.90	218.53	(0.00)	0.02
12	London	131.39	116.12	1.09	248.43	131.28	116.00	1.07	246.19	131.25	116.00	1.07	246.19	(0.24)	(0.01)
13	Southern	120.50	201.67	3.33	318.84	120.39	201.48	3.27	316.60	120.38	201.48	3.27	316.68	(0.24)	(0.00)
14	South Western	46.43	113.22	2.70	156.95	46.34	113.00	2.65	156.70	46.34	112.99	2.65	156.68	(0.26)	(0.02)
Total across all zones		994.34	1,617.32	15.13	2,596.53	996.52	1,621.12	14.95	2,602.69	996.85	1,621.69	14.93	2,603.61	6.16	0.92

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