CMP271 – Initial thoughts on Cost Recovery of GB Demand Transmission Charges

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Executive Summary

i. This paper provides initial thoughts on the relevant charging base for the cost recovery associated with locational GB demand tariffs. The Transport Model enables peak and year round tariffs to be derived from ACS Peak Demand (expressed in £/kW). This should be the starting point for consideration of the charging base since a capacity based charge will most closely represent the Transport Model, which in itself reflects the Security Standard.

ii. The peak background in the Security Standard is designed to represent investment in the transmission system that arise as a result of peak conditions on the transmission system while the year round background is designed to represent investment in the transmission system that arises as a result of year round conditions on the transmission system. In this context it seems sensible for cost recovery under the Peak Tariff to be based on a "peak" charging base using the current Triad arrangements (in £/kW).

iii. However, there are a number of options for the year round charging base including supplier consumption across the year (expressed in £/kWh tariffs, the P271 proposal) or a variant of the current charging base such as 1600 to 19:00 Supplier demand (expressed in £/kWh) or the current non half hourly demand charging base expressed in £/kWh). However, it does not seem appropriate for locational tariffs to be based on an arbitrary split between half-hour and non-half hour metering (the current arrangements)

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1. Introduction

1.1. This paper provides initial thoughts on the relevant charging base for the cost recovery associated with locational GB demand tariffs for the purpose of discussion at the CMP271 Working Group.

1.2. Section 2 presents the background to the current charging base and Section 3 considers the effects of the charging base on the peak and year round locational tariffs. Section 4 presents alternative options for the approach towards an enduring charging base for the locational tariffs. Section 5 concludes.

2. Background

2.1. The principles establishing GB electricity demand transmission tariffs are set out in Section 14 of the Connection and Use of System Code (CUSC) (see Annex 1). Tariffs are derived from a DC load flow model (Transport Model) based on the capacity in each zone. The rationale for setting the transmission tariffs is set out in CUSC Section 14.14.6 which states that:

"The underlying rationale behind Transmission Network Use of System charges is that efficient economic signals are provided to Users when services are priced to reflect the

incremental costs of supplying them. Therefore, charges should reflect the impact that Users of the transmission system at different locations would have on the Transmission Owner's costs, if they were to increase or decrease their use of the respective systems. These costs are primarily defined as the investment costs in the transmission system, maintenance of the transmission system and maintaining a system capable of providing a secure bulk supply of energy".

2.2. Section 14.17.9 sets out the basis for demand charges. It applies a combined (peak and year round) locational tariff and the demand residual to the relevant charging base, which in the case of suppliers is either half hourly or non-half hourly demand. The arrangement is explained as follows:

14.17.9 A Supplier BM Unit charges will be the sum of its energy and demand liabilities where:

- *The Chargeable Demand Capacity will be the average of the Supplier BM Unit's half-hourly metered demand during the Triad (and the £/kW tariff), and*

- *The Chargeable Energy Capacity will be the Supplier BM Unit's non half-hourly metered energy consumption over the period 16:00 hrs to 19:00 hrs inclusive every day over the Financial Year (and the p/kWh tariff).*

2.3. In addition to supplier charges, the CUSC explains that certain users (exemptible generators with BMUs and BEGAs) are also liable for demand charges. This class of user can therefore receive Triad benefits directly if they reduce overall demand in the Triad period in the relevant GSP Group.

2.4. There are a number of observations about the current charging methodology in relation to cost recovery:

- The Transport Model is based on the ACS peak demand at each node translated to a zonal capacity for each GSP group. However the CUSC introduces an arbitrary split for supplier demand based on half-hourly and non-half hourly meters;,
- The charging methodology introduces a distinction between capacity charges for half hourly customers and energy charges for non-half hourly customers;
- The differentiation between half hourly and non-half hourly consumption; classes does not reflect the underlying investment conditions in the Security Standard; and
- Demand locational tariffs are combined by adding together the peak and year round locational tariffs and adjusted by the residual to ensure overall Transmission Owner revenue recovery. Although the tariffs preserve relative locational signals there are issues associated with the absolute level of the tariffs, particularly in relation to the avoidable cost signals for distribution connected generators.

2.5. The CUSC sets out the underlying "further" objectives for charging as follows:

"14.14.11 *In setting and reviewing these charges The Company has a number of further objectives. These are to:*

- *offer clarity of principles and transparency of the methodology;*
- *inform existing Users and potential new entrants with accurate and stable cost messages;*
- *charge on the basis of services provided and on the basis of incremental rather than average costs, and so promote the optimal use of and investment in the transmission system; and*
- *be implementable within practical cost parameters and time-scales*".

2.6. The current basis of Supplier charges must be assessed in the context of these criteria. While the current charges are transparent, and practical to implement the key issue is whether they provide "*accurate and stable cost messages*" or whether they "*promote the optimal use of and investment in the transmission system".*

2.7. This paper considers the effects of the demand charging base on the locational elements of the tariff. The issues associated with the residual and its effects on demand charges are considered elsewhere (see CMP271 work stream 3).

3. The effect of the demand charging base on locational tariffs

3.1. The underlying Transport Model is based on ACS peak demand for each node under the peak security and the year round backgrounds. However, the locational tariffs are currently combined to form the locational tariff and a residual component is added to ensure revenue recovery. This tariff is then then applied to half hour peak demand capacity measured at the Triad and supplier demand in the 16:00 -19:00 period across the year.

3.2. The demand charging base in the charging methodology is significantly different to basis on which the locational tariffs are derived under the Transport Model. This impacts on the absolute level of the marginal signals derived from the transport model. It addition the final tariff arrangements create differential incentives in relation to certain classes of consumer. This section considers that effects in relation to half hour and non-half our demand

Half Hourly demand

3.3. The Triad arrangements for half hourly demand are consistent with the use of the ACS peak demand background in the Transport Model. However its application to half hour demand exclusively is not.

3.4. The rationale for the current approach towards half-hourly charging is not set out in the current charging methodology. However, there may be a number of reasons for the use of a half-hourly demand charging base:

- It may reflect the assumption that half hourly customers can respond to a peak related charge, and thereby reduce peak related transmission investment; or
- It may be related to legacy arrangements that allowed certain large industrial customers metered on a half hourly basis relief from certain transmission charges; or
- It may be based on some historic assessment of avoidable transmission cost for half hourly customers.

3.5. Whatever the rationale for the half-hourly charging base, it is clear the scale and extent of the avoidable costs in the current tariffs for this class of customer is significant and

material. Furthermore, transmission charge forecasts suggest that in the absence of any regulatory intervention that the level of forecast avoidable costs is set to grow significantly. This growth has the potential to distort both the energy and capacity market by creating what may be described as excessive incentives to connect to distribution networks.

Non Half Hourly demand

3.6. The rationale for the non-half hourly charging base it not set out in the CUSC. The methodology is weighted to the relatively higher demand periods across the year (16:00 – 19:00). This may well reflect that it is appropriate to levy these tariffs from some notion of within day peak demand.

3.7. It is also worth noting that the non-half hourly tariff is a commodity based charge (p/kWh) and is only indirectly related to the capacity based locational tariff. IN other words the final tariff is in the form of an energy charge related to consumption (£/kWh) rather than a capacity charge.

The impact of the Demand Charging base

3.8. The effect of the charging base on user incentives should not be under estimated. It has the following effects:

- It provides a strong incentive for certain half hour users to avoid demand transmission charges at the peak;
- It recovers mush of the cost from inflexible half hourly and non-half hour users that are unable to respond to the signals;
- The transfer of customers from non-half hourly to half hourly impacts on cost recovery as in practice only half hourly customers are capable of avoiding the costs (the 16:00 to 19:00 charging base provides a weak signal to avoid costs); and
- The Triad approach may overly reward peak avoidance, resulting in flattening of peak demand and enhancing unpredictability of demand.

3.9. This section has attempted to clarify the basis for the current charging base with respect to locational tariffs. Staring from the current capacity based locational tariffs, the charging methodology translates the actual tariffs into separate charging bases for half hourly and non-half hourly. The following section considers potential alternative approaches to the charging base for demand locational tariffs and associated cost recovery.

4. The basis for the charging base for demand transmission tariffs

4.1. This section considers potential approaches towards the demand charging base for the locational tariffs and any associated cost recovery under modification proposal CMP271. It is not intended to provide a definitive approach by considers a number of potential options.

4.2. However, it does not include the current charging arrangements (combined locational tariffs and distinct half hour and non-half hour charging base) as a sustainable approach. There are a number of reasons for this:

- There is no clear rationale for combining locational charges and dividing the charging base into half hourly or no half hourly charges except for administrative simplicity;

- The use of half hourly and non-half hourly charging bases has incentive properties that may be inefficient in terms of transmission investment; and
- The arrangements are unsustainable as customers migrate from non-half hour to half hourly through the introduction of smart meters.

4.3. The following sections discuss potential options for the charging base. These build on the assumption that there will be two locational tariffs (peak and year round) and some element of cost recovery associated with them. Therefore the charging base for each tariff may be different.

4.4. **Option 1: Base the Tariff charging base on the demand capacity in the Transport Model for both peak and year round locational tariffs.**

4.4.1. This option utilises the current capacity based methodology that underpins the Transport Model. Consequently Supplier charges for both peak and year round would be based on the underlying assumptions regarding ACS peak demand. Charges would be set accordingly and levied on supplier forecast demand. These charges could be reconciled to actual annual demand to ensure consistent cost recovery. Therefore the charging base would be:

- **Peak Security Locational Tariff**: Forecast supplier ACS Peak Demand adjusted for actual demand outcome (£/kW); and
- **Year Round Locational Tariff:** Forecast supplier ACS Peak Demand adjusted for actual demand outcome (£/kW).

4.4.2. The benefits of this approach are that the locational charging arrangements are directly related to the capacity-based assumptions in the Transport Model. On this basis the charges could be considered to be more cost reflective than the current arrangements.

4.4.3. The drawback with this approach is that it would provide incentives to avoid charges for **both** the peak and year round charges. This would appear to undermine the principle in relation to promoting optimal use of the transmission system, since it would create a “peak” incentive in relation to “year round charges”.

4.5. Option 2: Supplier capacity-based peak tariffs and a year round supplier commodity tariff for year round tariffs (the CMP271 Proposal)

4.5.1. This option would use the existing locational tariffs derived from capacity but address the charging base differently. The peak charges would be based on supplier forecast demand at the Triad (with no differentiation between half hour and non-half hour consumption.). The year round tariff would be converted into a year round commodity tariff for each supplier (again with no differentiation between half hour and non-half hour consumption). Therefore the charging base would be:

- **Peak Security Locational Tariff**: Forecast supplier ACS Peak Demand adjusted for actual demand outcome (£/kW); and
- **Year Round Locational Tariff:** Forecast supplier ACS Peak Demand converted into a commoditised tariff based of forecast supplier

consumption across the year and adjusted for actual demand outcome (£/kWh).

4.5.2. The benefits of this approach are that the locational charging arrangements for the peak tariff are directly related to the capacity-based assumptions in the Transport Model while the commodity tariff is more closely related to the assumptions that reflect the year round conditions on the system. Clearly the peak tariff would retain some element of the Triad base charges. This approach would complement the wider charging objectives in relation to stable cost messages and be implementable.

4.5.3. The main drawback of this approach is that the year round tariff no longer directly relates to the capacity based approach in the Transport Model. The key question is whether a commodity based charge is a better proxy for the security standard when compared to the current basis of charging.

4.6. Option 3: Supplier capacity-based peak tariffs and a supplier commodity tariff for Year Round tariffs based on 16:00 – 19:00 supplier forecast demand

4.6.1. This option would use the current charging arrangements for the Triad but the charging base for base peak tariffs would be supplier peak demand (no distinction between half-hour and non-half hour) and base the year round tariff on supplier forecast consumption between 16:00 and 19:00. Therefore the charging base would be:

- **Peak Security Locational Tariff**: Forecast supplier ACS Peak Demand adjusted for actual demand outcome (£/kW); and
- **Year Round Locational Tariff:** Forecast supplier ACS Peak Demand in the 16:00 – 19:00 periods converted into a commoditised tariff based on supplier consumption across the year and adjusted for actual demand outcome (£/kWh).

4.6.2. The benefits of this approach are that resembles the current charging regime, notably the Triad based charging for the peak tariff and the 16:00 to 19:00 charging period for the year round element. Therefore there are benefits in terms of simplicity of implementation. However it is based on total supplier demand rather than a distinction between half hourly and non-half hourly demand.

4.6.3. Clearly this approach moves away from the underlying capacity based charge that forms the basis of charging in the transport model. Again, the key question is whether a commodity based charge is a better proxy for the security standard when compared to the current basis of charging.

4.7. Option 4: Supplier capacity based peak tariffs for half-hourly demand and a supplier commodity tariff for year round tariffs based on 16:00 – 19:00 supplier non half hourly demand

4.7.1. This option would use the current charging arrangements for the Triad for peak tariffs which would be applied half hourly demand. The year round tariff would be applied to the non-half hour demand charging base. Therefore the charging base would be:

- **Peak Security Locational Tariff**: Forecast supplier half hourly ACS Peak Demand adjusted for actual demand outcome (£/kW); and
- **Year Round Locational Tariff:** Forecast supplier non half hourly ACS Peak Demand in the 16:00 – 19:00 periods converted into a commoditised tariff based on supplier consumption across the year and adjusted for actual demand outcome (£/kWh).

4.7.2. This approach maintains the distinction between half hourly and non-half hourly charging bases with respect to the two locational tariffs. Therefore it maintains key elements of the current charging regime, and would be simple to implement. .

4.7.3. The main drawback of this approach is the use of half hourly and non-half hourly demand as a basis of charge. There is no clear rationale for this in terms of the cost reflectivity in terms of the application of charges (as noted above). Furthermore, as the introduction of smart meters will further complicate the incentive properties associated with the locational tariffs.

5. Negative and Positive Marginal MWkm and Cost Recovery

5.1. One of the key questions for the cost reflectivity of the locational signals is whether it is appropriate to create and apply the negative and positive locational signals in the tariffs. Given the incentive properties, it is appropriate to consider whether ii is a correct incentive to increase or reduce demand in certain zones during peak periods or year round given the wider impact of such incentives on for example, transmission investment, generation investment and security of supply from short term operation effects.

5.2. However, it is important to preserve the **relative** locational signals derived from the MWkm rather than the **absolute** level of these signals (which simply reflect model assumptions). Consequently if it were determined that it is inappropriate to provide negative peak demand signals in the locational tariffs then the resultant tariffs should be adjusted so that the lowest zonal tariff was set to zero and the relative marginal signals preserved. This is illustrated in Table 1 and Table 2.

Table 1: Peak Tariffs for 2017/18 rebased to avoid negative charges

Zone	Zone Name	Total Demand Charge Base: Triad Demand (GW)	Peak Security Transport Zonal Tariff (£/kW)	Peak Security Tariff Adjuster £/KW	Effective Peak Security Zonal Tariff (£/kW)	Adjusted Zonal Revenue (£m)
1	Northern Scotland	0.923	1.87	-6.19	8.06	7.44
2	Southern Scotland	3.109	0.02	-6.19	6.21	19.30
3	Northern	2.267	-2.67	-6.19	3.51	7.97
4	North West	3.854	-0.71	-6.19	5.47	21.09
5	Yorkshire	3.566	-2.58	-6.19	3.61	12.87
6	N Wales & Mersey	2.350	-1.82	-6.19	4.37	10.27
7	East Midlands	4.360	-2.13	-6.19	4.06	17.68
8	Midlands	4.125	-1.41	-6.19	4.78	19.70
9	Eastern	6.036	1.04	-6.19	7.23	43.62
10	South Wales	1.657	-6.19	-6.19	0.00	0.00
11	South East	3.711	3.86	-6.19	10.04	37.27
12	London	4.112	5.05	-6.19	11.23	46.18
13	Southern	5.179	1.68	-6.19	7.87	40.74
14	South Western	2.436	-0.93	-6.19	5.25	12.79
		47.684				296.912

Table 2: Year Round Tariffs for 2017/18 rebased to avoid negative charges

Zone	Zone Name	Total Demand Charge Base: Triad Demand (GW)	Year Round Transport Zonal Tariff (£/kW)	Year Round Tariff Adjuster £/KW	Effective Year Round Zonal Tariff (£/kW)	Adjusted Zonal Revenue (£m)
1	Northern Scotland	0.923	-20.11	-20.11	0.00	0.00
2	Southern Scotland	3.109	-17.36	-20.11	2.75	8.56
3	Northern	2.267	-5.92	-20.11	14.19	32.17
4	North West	3.854	-1.85	-20.11	18.26	70.36
5	Yorkshire	3.566	-0.27	-20.11	19.84	70.74
6	N Wales & Mersey	2.350	0.79	-20.11	20.90	49.12
7	East Midlands	4.360	2.21	-20.11	22.32	97.30
8	Midlands	4.125	3.05	-20.11	23.16	95.54
9	Eastern	6.036	0.76	-20.11	20.87	125.98
10	South Wales	1.657	3.92	-20.11	24.03	39.81
11	South East	3.711	0.87	-20.11	20.98	77.85
12	London	4.112	2.11	-20.11	22.22	91.37
13	Southern	5.179	3.91	-20.11	24.02	124.42
14	South Western	2.436	5.08	-20.11	25.19	61.34
		47.684				944.565

5.3. It should be noted that any rebasing of the demand locational tariffs to avoid negative charges and preserve relative locational signals has implications for cost recovery as illustrated in Table 1 and 2. Note that the data in Tables 1 and 2 is based on a capacity charging base in each charging zone (consistent with the Transport Model inputs).

5.4. The nature of locational signals from the Transport Model is influenced by the charging base. Currently the half hour/non half hourly split creates different signals in relation to different users on the transmission system. These issues should be considered further under the cost recovery work stream under CMP271. Further consideration of the appropriate charging base and its effects on locational signals is required if it is determined that it is inappropriate to maintain negative locational demand tariffs.

6. Conclusions

6.1. This paper has considered the issues associated with the cost recovery associated with the locational peak and year round tariffs and their application to an appropriate charging base. The current basis of charging, which combines the locational tariff and applies it to either half hourly demand capacity or non-half hourly consumption may be unsustainable. Indeed the underlying rationale for such an approach in terms of efficient locational signals may be questionable while such an approach appears incompatible with the underlying charging objectives set out in the CUSC.

6.2. There are a number of options available for applying the peak and year round tariffs to differing charging bases ranging from capacity based tariffs to some form of capacity/commodity split. The capacity approach is most closely aligned with the underlying assumptions of the Transport Model which is based on capacity. However, a split based on a peak capacity base for the peak tariff and a commodity base for the year round tariff may have favourable incentives, particularly in relation to the underlying rationale for the “year round” element of the Transport Model (as representing year round conditions on the transmission system)

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Annex A: Investment Cost Related Pricing (ICRP) methodology and demand tariffs

Introduction

A.1. The Investment Cost Related Pricing (ICRP) methodology introduced in 1993/94 is used to calculate transmission charges in Great Britain (GB). The charges are based on deriving the marginal investment cost of additional demand or generation using a DC Load Flow model (the Transport Model).

The Transport Model

A.2. The ICRP methodology considers the effects of an incremental MW at each node on the transmission system. This is achieved through increasing generation and demand at each node and identifying the incremental effects. The impact of the marginal MW is measured in "MWkm" (which can be positive and negative) for each node the Transport Model.

A.3. The marginal effects are categorised as related to either a "Peak Security" or a "Year Round" background, which reflect drivers for investment in transmission assets as set out in the National Electricity Transmission System (NETS) System Quality and Security Standard (SQSS).

A.4. The SQSS makes certain assumptions about the generation and demand capacity of each node on the system which are used in the Transport Model:

- The Peak Security scales "conventional generation" to meet ACS (average cold spell) peak demand (there is no contribution from "intermittent" generation capacity"); and
- The Year Round background assumes fixed scaling factors for "intermittent" generation and scales conventional generation to meet ensure that ACS peak demand is satisfied.

Transport Model Outputs

A.5. The output from the Transport Model is marginal MWkm grouped together into GSP Groups for demand and generation zones for each background weighted by the relevant demand or generation capacity. Generation zones are based on grouping nodes that are electrically and geographically proximate using a fixed differential (+/- 1.00kW) for the wider marginal costs.

A.6. The zonal tariffs are derived by multiplying the marginal MWkm by an "expansion constant" which reflects the assumed incremental costs per MW of transmission investment and a "security factor" that reflects the requirement network resilience (using the N-1 standard). The incremental MW and the derived £/kW tariffs for demand in 2017/18 are illustrated in Table A1.

Table A1: Demand tariffs in 2017/18[1]

Derivation of Zonal Demand HH Tariffs			Peak Security			
Zone	Zone Name	Total Demand Charge Base: Triad Demand (GW)	Peak Security Unadjusted Zonal Wtd Marginal (km)	Expansion Constant (£/MWkm) 13.575354	Locational Security Factor 1.8	Peak Security Transport Zonal Tariff (£/kW)
1	Northern Scotland	0.923	-76.64	-1,040.45	-1,872.81	1.87
2	Southern Scotland	3.109	-0.92	-12.52	-22.54	0.02
3	Northern	2.267	109.32	1,484.00	2,671.21	-2.67
4	North West	3.854	29.20	396.42	713.56	-0.71
5	Yorkshire	3.566	105.43	1,431.27	2,576.29	-2.58
6	N Wales & Mersey	2.350	74.35	1,009.29	1,816.72	-1.82
7	East Midlands	4.360	87.18	1,183.56	2,130.41	-2.13
8	Midlands	4.125	57.72	783.51	1,410.31	-1.41
9	Eastern	6.036	-42.63	-578.77	-1,041.79	1.04
10	South Wales	1.657	253.13	3,436.39	6,185.50	-6.19
11	South East	3.711	-157.88	-2,143.29	-3,857.92	3.86
12	London	4.112	-206.46	-2,802.83	-5,045.10	5.05
13	Southern	5.179	-68.74	-933.11	-1,679.61	1.68
14	South Western	2.436	38.22	518.83	933.90	-0.93
		47.684				

Derivation of Zonal Demand HH Tariffs			Year Round			
Zone	Zone Name	Total Demand Charge Base: Triad Demand (GW)	Year Round Unadjusted Zonal Wtd Marginal (km)	Expansion Constant (£/MWkm) 13.575354	Locational Security Factor 1.8	Year Round Transport Zonal Tariff (£/kW)
1	Northern Scotland	0.923	822.95	11,171.82	20,109.28	-20.11
2	Southern Scotland	3.109	710.26	9,642.03	17,355.65	-17.36
3	Northern	2.267	242.23	3,288.41	5,919.15	-5.92
4	North West	3.854	75.87	1,029.97	1,853.94	-1.85
5	Yorkshire	3.566	11.04	149.88	269.78	-0.27
6	N Wales & Mersey	2.350	-32.53	-441.54	-794.77	0.79
7	East Midlands	4.360	-90.30	-1,225.84	-2,206.52	2.21
8	Midlands	4.125	-125.02	-1,697.14	-3,054.86	3.05
9	Eastern	6.036	-31.20	-423.55	-762.40	0.76
10	South Wales	1.657	-160.60	-2,180.14	-3,924.24	3.92
11	South East	3.711	-35.48	-481.64	-866.95	0.87
12	London	4.112	-86.43	-1,173.33	-2,112.00	2.11
13	Southern	5.179	-160.13	-2,173.79	-3,912.82	3.91
14	South Western	2.436	-207.76	-2,820.41	-5,076.74	5.08
		47.684	932.92			

A.7. Based on the demand capacity and the transport tariffs an initial estimate of the revenue recovery through the locational tariffs can be derived from the model for each background. This is illustrated in Table A2 for the 2017/18 Demand Tariffs.

[1] The "Total Demand Charge Base: Triad Demand" is the peak demand on the transmission system for the purpose of setting tariffs

Table A2: Notional revenue recovery from demand locational tariffs using demand capacities

Derivation of Zonal Demand HH Tariffs				
Zone	Zone Name	Total Demand Charge Base: Triad Demand (GW)	Peak Security Transport Zonal Revenue (£m)	Year Round Transport Zonal Revenue (£m)
1	Northern Scotland	0.923	1.73	-18.57
2	Southern Scotland	3.109	0.07	-53.96
3	Northern	2.267	-6.06	-13.42
4	North West	3.854	-2.75	-7.15
5	Yorkshire	3.566	-9.19	-0.96
6	N Wales & Mersey	2.350	-4.27	1.87
7	East Midlands	4.360	-9.29	9.62
8	Midlands	4.125	-5.82	12.60
9	Eastern	6.036	6.29	4.60
10	South Wales	1.657	-10.25	6.50
11	South East	3.711	14.32	3.22
12	London	4.112	20.74	8.68
13	Southern	5.179	8.70	20.27
14	South Western	2.436	-2.27	12.37
		47.684	**1.96**	**-14.33**

Charging Methodology

A.8. For the purpose of applying the tariffs to Supplier demand in the charging methodology under the CUSC, the zonal demand locational tariffs in the model are combined for each zone (peak and year round locational tariffs are added together). The effect of the combined locational tariff using the demand capacity methodology on revenue recovery is illustrated in Table A3.

Table A3: Notional zonal demand revenue recovery from combined locational tariffs in 2017/18 (excluding the residual component of the tariff and based on the current charging methodology)

Derivation of Capped Zonal Demand NHH Tariffs			Final HH Demand Tariffs	
Zone	Zone Name	Total Demand Charge Base: Triad Demand (MW)	Final Zonal Tariff (£/kW)	Final Zonal Revenue Recovery (£m)
1	Northern Scotlan	923.39	-18.24	-16.84
2	Southern Scotlan	3,109.18	-17.33	-53.89
3	Northern	2,266.99	-8.59	-19.47
4	North West	3,853.96	-2.57	-9.90
5	Yorkshire	3,565.78	-2.85	-10.15
6	N Wales & Merse	2,349.89	-1.02	-2.40
7	East Midlands	4,360.13	0.08	0.33
8	Midlands	4,124.58	1.64	6.78
9	Eastern	6,035.90	1.80	10.89
10	South Wales	1,656.54	-2.26	-3.75
11	South East	3,711.20	4.72	17.53
12	London	4,111.70	7.16	29.43
13	Southern	5,179.46	5.59	28.97
14	South Western	2,435.66	4.14	10.09
		47,684.35		**-12.37**

A.9. The final stage in the charging methodology is to adjust the locational charges to ensure overall cost recovery. This is through a “residual” adjustment to the tariffs (Table A4).

Table A4: Combined locational demand tariffs and residual adjustment

Zone	Zone Name	Total Demand Charge Base: Triad Demand (MW)	Final Locational Tariff (£/kW)	Residual Tariff (£/kW)	Final Zonal Tariff (£/kW)
1	Northern Scotland	923.39	-18.24	47.98	29.75
2	Southern Scotland	3,109.18	-17.33	47.98	30.65
3	Northern	2,266.99	-8.59	47.98	39.39
4	North West	3,853.96	-2.57	47.98	45.42
5	Yorkshire	3,565.78	-2.85	47.98	45.14
6	N Wales & Mersey	2,349.89	-1.02	47.98	46.96
7	East Midlands	4,360.13	0.08	47.98	48.06
8	Midlands	4,124.58	1.64	47.98	49.63
9	Eastern	6,035.90	1.80	47.98	49.79
10	South Wales	1,656.54	-2.26	47.98	45.72
11	South East	3,711.20	4.72	47.98	52.71
12	London	4,111.70	7.16	47.98	55.14
13	Southern	5,179.46	5.59	47.98	53.58
14	South Western	2,435.66	4.14	47.98	52.13
		47,684.35			

A.10. Tariffs are applied to half hourly demand base on a “half hourly” p/kW tariff applied to system peak demand capacity measured across the three half hours in the winter separated by 10 days (the Triad demand) (Table A5).

Table A5: Half hour demand tariffs and revenue recovery 2017/18.

Zone	Zone Name	Total Demand Charge Base: Triad Demand (MW)	Final Zonal Tariff (£/kW)	Chargeable HH Zonal Triad Demand (MW)	HH Zonal Triad Demand Revenue Recovery (£m)
1	Northern Scotland	923.39	-18.24	- 668.025	-19.87
2	Southern Scotland	3,109.18	-17.33	641.726	19.67
3	Northern	2,266.99	-8.59	314.289	12.38
4	North West	3,853.96	-2.57	1,174.622	53.35
5	Yorkshire	3,565.78	-2.85	1,106.638	49.95
6	N Wales & Mersey	2,349.89	-1.02	519.724	24.41
7	East Midlands	4,360.13	0.08	1,456.313	69.99
8	Midlands	4,124.58	1.64	1,400.271	69.49
9	Eastern	6,035.90	1.80	1,472.861	73.33
10	South Wales	1,656.54	-2.26	554.199	25.34
11	South East	3,711.20	4.72	870.404	45.88
12	London	4,111.70	7.16	2,194.260	121.00
13	Southern	5,179.46	5.59	1,649.598	88.38
14	South Western	2,435.66	4.14	540.175	28.16
		47,684.35		**13,227.05**	**661.46**

A.11. Tariffs are applied to the “non-half hour” charging base through a p/KWh tariff based on supplier demand from 16:00 to 19:00 hrs every day over the financial year. (Table A6).

Table A6: Locational Non half hour demand tariffs adjusted for the residual and revenue recovery 2017/18.

Zone	Zone Name	Residual NHH Zonal Demand (MW)	Required NHH Zonal Revenue Recovery (£m)	NHH Zonal 1600-1900 Demand (TWh)	NHH Zonal 1600-1900 Demand Share (%)	NHH Zonal Tariff (p/kWh)
1	Northern Scotland	1,591.42	47.34	0.752253	3%	6.29
2	Southern Scotland	2,467.45	75.63	1.763499	7%	4.29
3	Northern	1,952.71	76.93	1.286790	5%	5.98
4	North West	2,679.33	121.69	2.063560	8%	5.90
5	Yorkshire	2,459.14	111.00	1.850096	7%	6.00
6	N Wales & Mersey	1,830.17	85.95	1.295523	5%	6.63
7	East Midlands	2,903.82	139.56	2.226530	9%	6.27
8	Midlands	2,724.31	135.21	2.097776	8%	6.45
9	Eastern	4,563.04	227.19	3.189258	13%	7.12
10	South Wales	1,102.34	50.40	0.870233	3%	5.79
11	South East	2,840.79	149.74	1.995657	8%	7.50
12	London	1,917.44	105.73	1.927899	8%	5.48
13	Southern	3,529.86	189.12	2.675603	11%	7.07
14	South Western	1,895.49	98.81	1.318527	5%	7.49
		34,457.30	**1,614.29**	**25.313203**		