Annex 8 - Current charging arrangments and residual allocation

Transmission residual charges

1.1 For transmission, charges have historically been first split between generation and final demand (usually charged via suppliers) on a fixed proportion, and then between forward-looking and residual charges. Due to an EU cap on average overall Transmission Network Use of System (TNUoS) charges for generation, this is no longer possible and the split between transmission charges for generation and demand is determined by the EU cap. In addition, the average forward-looking charges for generation now exceed the EU cap, which means the transmission generation residual (TGR) charge is now functioning as an adjustment mechanism to ensure average generation charges stay within the cap, and is currently negative. The transmission demand residual (TDR) charge remains a mechanism to ensure overall allowed revenues are recovered, and it remains positive.

1.2 Domestic and smaller business consumers are currently settled largely on a non half-hourly basis. This means that they are charged for use of the energy networks based on a combination of the kWh they have consumed and the estimated consumption patterns for their 'Profile Class'.[1,2] Consumers in different demand zone areas are charged at different rates reflecting the different price controls of the 14 Distribution Network Operator (DNO) regions. Residual charges recovered in this way incentivise potentially inefficient load reduction measures, for example through on-site generation. These measures are considered inefficient when they do not lead to significant network cost savings, with benefits to these users not reflecting benefits (or costs) they provide to the system.

1.3 Larger industrial, larger storage and commercial consumers are generally settled on a half-hourly basis. They pay both forward-looking and residual charges based on their net demand during the three half-hours of highest demand on the GB electricity transmission system over the winter period.[3] This provides strong incentives for changes in the timing and level of network use, which is appropriate for the forward-looking charges which are designed to encourage efficient use of the network.

[1] Suppliers are charged for consumers' use of the network and are free to decide how they reflect this cost when billing their customers.
[2] Profile Classes are allocated depending on whether: the Metering System Identifier is Import or Export; meter usage is Domestic or Non-Domestic; the meter has 'switched load' capabilities; and if Maximum Demand is recorded. More information on the allocation of Profile Classes is available from: https://www.elexon.co.uk/csd/bscp516-allocation-of-profile-classes-and-sscs-for-non-half-hourly-sva-metering-systems-registered-in-smrs/
[3] For example, in 2018/19 the triad period will be the three half-hours of highest demand, Nov-18 to Feb 17 (inclusive), separated by 10 days.

However, levying residual charges on the same basis means that some customers who take action to reduce net consumption during these periods are contributing less towards residual charges.[4]

1.4 Prior to our decision on CMP264/265, transmission demand residual charges were based on net demand in a Grid Supply Point (GSP) group during peak 'triad' periods. Net demand is the gross or total customer demand on the distribution network, less any generation output from smaller embedded generation, within each GSP.[5] This arrangement, historically, generated significant revenues for smaller embedded generation. Those customers with on-site generation, or the ability to reduce their demand at specific times are still able to reduce their exposure to residual charges.

1.5 Transmission generation charges are levied on transmission-connected generation, larger embedded generation (>100MW) and larger storage, but not on smaller embedded generation or on interconnected generation.

Distribution residual charges

1.6 On the distribution side, residual charges are recovered from customers based on the kWh they have consumed. Since the implementation of DCP228 in April 2018, residual charges are recovered on peak consumption for consumers connected at low and high voltages and are applied as a 'fixed adder' to the forward-looking charges.[6,7] Due to the implementation of DCP228, the previous methodology which used a £/kW/year applied at the transmission exit level (which primarily scales the on peak usage), was replaced with a fixed p/kWh adder applied to the calculated pre-scaled unit rates. This means that all unit rates will face the same absolute p/kWh adjustment (except where any unit rates are subject to a floor price).

1.7 This approach allocates the distribution residual charges among the distribution voltage levels, while maintaining the cost-signal differential for consumption at different times. Due to the residual charges being recovered from customers based on the kWh they have consumed, as with non half-hourly transmission charges, distribution residual charges incentivise potentially inefficient measures to reduce overall consumption in kWh. This could mean that network users reduce their usage and/or run on-site generation, which is not justified by the savings in marginal system costs.

1.8 Distribution charges are levied on demand users and storage, and some generation. Further information can be found in Table below.

[4] 'Net consumption' is used to explain the aggregate demand (total demand minus generation) at a given point in the network. This can be either taken at different voltage levels of the network such as at the GSP group level (where generation can be netted off from demand) or down to household consumer level (where generation, such as solar PV output can be netted off from consumer demand). It can also be monitored over different time horizons, such as on a half-hourly basis (for large users) up to an annual meter reading.
[5] https://www.ofgem.gov.uk/publications-and-updates/embedded-benefits-impact-assessment-and-decision-industry-proposals-cmp264-and-cmp265-change-electricity-transmission-charging-arrangements-embedded-generators
[6] Adds fixed amounts to the unit rate element of the Distribution Use of System charge.
[7] https://www.ofgem.gov.uk/system/files/docs/2016/09/dcp228_decison_letter.pdf

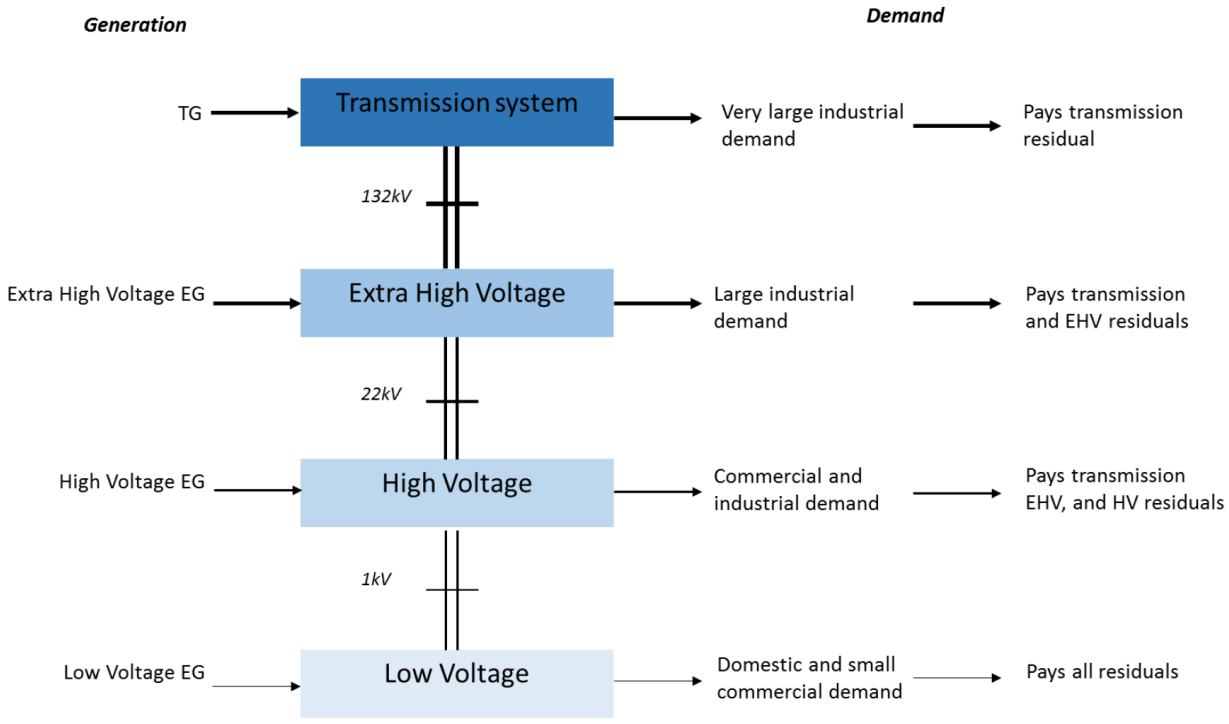
Allocation of residuals

1.9 As discussed above, there are three key forms of allocation of electricity transmission and distribution charges within the existing framework:

- initial allocation to generation or demand
- intermediate allocation via voltage level
- allocation to demand

1.10 Currently, residual charges are paid predominantly by demand, and demand users contribute to residual costs for the voltage levels they are connected to and for those voltage levels above. (see figure 1 below).

Figure 1 Illustration of how residual charges are recovered according to network level



1.11 This is because transmission demand residual charges are paid on an equal basis by all users based on gross transmission demand, while distribution residual charges for a given distribution voltage level are paid only by those at that level or below. This reflects an assumption that most users are considered to benefit more from the higher voltage levels above them, reflecting the historic flow directions.

1.12 The table below shows who is liable for residuals and balancing charges currently, including storage, which currently pays both generation and demand charges. Charges for storage is discussed in greater detail in annex 5.

Table 1 - Who pays residual charges?

		T Generation	T Demand	T Storage†	D Smaller EG*	D Larger EG**	D Smaller Storage*†	D Larger Storage**†	D Demand
Transmission residual	Generation	✔		✔		✔		✔	
	Demand		✔	✔	††		††	✔	✔
Distribution residual	Generation				✔ EHV All others		✔ EHV All others		
	Demand								✔
Balancing	Generation	✔		✔		✔		✔	
	Demand		✔	✔	Paid		Paid	✔	✔

✔ - Pay the charge Paid – can get paid the inverse of the charge
* <100MW EG **>100MW EG
† - may be affected by ongoing storage modifications CMP280 & CMP281
†† - Receive payments, in the form of the Embedded Export Tariff following CMP264/5 WACM4 implementation

1.13 There is regional variation to the level of residuals paid. This is due to the variation in allowed revenues in each region and minor differences in the cost-reflective methodologies. At transmission level, there are variations caused by the demand forecasts that go into the calculations to produce the non-half-hourly charges paid by smaller users.