

**DCP 452 – Correct application of Forward Cost Pricing EDCM charges to users
connected directly to a Grid Supply Point**

Legal Text

Amend Paragraph 2.7 of Schedule 17 (EHV Charging Methodology (FCP Model)) as follows:

Definition of Network Groups

- 2.7 The Authorised Network Model is split into Network Groups, thereby reflecting the zonal nature of the FCP model. A Network Group is a contained portion of the Authorised Network Model defined by physical, operational and technical boundaries that is not electrically connected to another part of the network at the same voltage level under normal operating conditions. A Network Group is defined as the network normally supplied from a Grid Supply Point (GSP) substation, a Bulk Supply Point (BSP) substation, or a Primary Substation. In situations where GSP substations, BSP substations or Primary Substations are operated in parallel, the network associated with such parallel GSP substations, BSP substations or Primary Substations is considered as one Network Group. In situations where GSP substations are not operated in parallel, Connectees which connect directly to those GSP substations (those which are assigned Customer Category 0000 according to Paragraph 15.6) shall be excluded from the relevant Network Group for that GSP substation.
- 2.8 Guidance relating to the definition of Network Groups is presented in section 6 (Network Groups) of Annex 1.

Amend Paragraphs 6.2 and 6.3 of Schedule 17 (EHV Charging Methodology (FCP Model)) as follows:

6. APPLICATION OF FCP CHARGE 1

- 6.1 Each tariff in the model is linked to one FCP location or network group. Each FCP network group may be linked to a parent FCP network group and a grandparent FCP network group. Each FCP network group may have a charge 1 in £/kVA/year associated with it.
- 6.2 The import charges for the application of charge 1 is given by the formulas:

For Connectees with Customer Category 0000 at GSP substations which are not operated in parallel (those excluded from the relevant Network Group as per Paragraph 2.7):

[p/kWh super-red rate] = 0

[p/kVA/day capacity charge] = 0

For other Connectees with zero average kW/kVA:

$$[p/kWh \text{ super-red rate}] = ([\text{parent charge } 1 \text{ £/kVA/yr}] * (\text{abs}[A1] / (\text{SQRT}(A1^2 + R1^2))) / [\text{Super-red hours}] * 100) + ([\text{grandparent charge } 1 \text{ £/kVA/yr}] * (\text{abs}[A2] / (\text{SQRT}(A2^2 + R2^2))) / [\text{Super-red hours}] * 100)$$
$$[p/kVA/day \text{ capacity charge}] = ([\text{network charge } 1 \text{ £/kVA/year}] / [\text{days in Charging Year}] * 100) + ([\text{parent charge } 1 \text{ £/kVA/yr}] * (-R1 * \text{Average kVA}r/kVA) / (\text{SQRT}(A1^2 + R1^2))) / [\text{days in Charging Year}] * 100 + ([\text{grandparent charge } 1 \text{ £/kVA/yr}] * (-R2 * [\text{Average kVA}r/kVA]) / (\text{SQRT}(A2^2 + R2^2))) / [\text{days in Charging Year}] * 100)$$

For all other Connectees:

$$[p/kWh \text{ super-red rate}] = [\text{parent charge } 1 \text{ £/kVA/yr}] * (\text{abs}[A1] - (R1 * ([\text{Average kVA}r/kVA] / [\text{Average kW/kVA}]))) / (\text{SQRT}(A1^2 + R1^2)) / [\text{Super-red hours}] * 100 + ([\text{grandparent charge } 1 \text{ £/kVA/yr}] * (\text{abs}[A2] - (R2 * ([\text{Average kVA}r/kVA] / [\text{Average kW/kVA}]))) / (\text{SQRT}(A2^2 + R2^2)) / [\text{Super-red hours}] * 100)$$
$$[p/kVA/day \text{ capacity charge}] = [\text{network group charge } 1 \text{ £/kVA/year}] / [\text{days in Charging Year}] * 100$$

Where:

A1 and R1 are the values of the active power flow and reactive power flow modelled through the parent network group in the maximum demand scenario.

A2 and R2 are the values of the active power flow and reactive power flow modelled through the grandparent network group in the maximum demand scenario.

If both A1 and R1 are equal to zero, in respect of that network level in the formulas above, the term $(\text{abs}[A1] / (\text{SQRT}(A1^2 + R1^2)))$ is set equal to 1, $(-R1 * \text{Average$

$\text{kVar/kVA}] / (\text{SQRT}(A1^2 + R1^2))$ is set equal to zero, and $([\text{Average kVar/kVA}] / [\text{Average kW/kVA}]) / (\text{SQRT}(A1^2 + R1^2))$ is also set to zero.

If both $A2$ and $R2$ are equal to zero, in respect of that network level in the formulas above, the term $(\text{abs}[A2] / (\text{SQRT}(A2^2 + R2^2)))$ is set equal to 1, $(-R2 * \text{Average kVar/kVA}] / (\text{SQRT}(A2^2 + R2^2))$ is set equal to zero, and $([\text{Average kVar/kVA}] / [\text{Average kW/kVA}]) / (\text{SQRT}(A2^2 + R2^2))$ is also set to zero.

Any negative contributions to the [p/kVA/day capacity charge] or the [p/kWh super-red rate] from the parent or the grandparent network groups are set to zero.

Super red hours are the number of hours in the DNO Party's super-red time band.

The average kW/kVA and average kVar/kVA figures are forecasts for the Charging Year, based on data from the most recent regulatory year for which data were available in time for setting charges for the Charging Year. Specifically, active and reactive power consumptions are averaged over a super-red time band, which is a seasonal time of day period determined by the DNO Party to reflect the time of peak, and then divided by the Maximum Import Capacity (averaged over the same financial year). If the DNO Party considers that the reactive consumption data relates to export rather than import (e.g. the average kVar figure exceeds half of the Maximum Import Capacity) then the Maximum Import Capacity in the denominator should be replaced by the Maximum Export Capacity of the same Connectee. The average kVar divided by kVA is restricted to be such that the combined active and reactive power flows cannot exceed the Maximum Import Capacity.

- 6.3 Charge 1 is applied to export charges as a credit. The credit is expressed as a negative charge rate in p/kWh and is applied in respect of active power units exported during the DNO Party's super-red time band. The credit rate is set to zero for Connectees who are assigned an F Factor of zero. The credit rate is calculated as follows:

For Connectees with Customer Category 0000 at GSP substations which are not operated in parallel (those excluded from the relevant Network Group as per Paragraph 2.7):

$[\text{p/kWh super-red export rate}] = 0$

For all other Connectees:

$$[\text{p/kWh super-red export rate}] = -100 * [\text{Proportion eligible for charge 1 credits}] * ([\text{network charge 1 £/kVA/year}] + [\text{parent charge 1 £/kVA/year}] + [\text{grandparent charge 1 £/kVA/year}]) * ([\text{Chargeable export capacity}]/[\text{Maximum export capacity}]) / [\text{number of hours in the super-red time band}]$$

Where:

The proportion eligible for charge 1 credits is zero if the F factor that is assigned to the Connectee as described in the FCP methodology is equal to zero, and 1 otherwise.

The super-red generation rate is not applied to Connectees with zero Chargeable Export Capacity.

Amend Paragraph 6.3 of Annex 1 to Schedule 17 (EHV Charging Methodology (FCP Model)) as follows:

6. NETWORK GROUPS

6.1 For the purpose of forecasting future reinforcement the network is broken down into a number of Network Groups. The use of Network Groups for analysis is an important stage in assessing security of supply requirements given in ER P2/6. Network Groups are defined at hierarchical levels, each level being defined by the operating voltage of the source substations, such that separate Network Groups are defined for Primary Substation, BSP and GSP levels.

6.2 Each Network Group is a part of the Distribution System that consists of:

- (a) the transformation assets at a source substation; and
- (b) the network that:
 - (i) operates at the same voltage as the lower voltage of these transformation assets; and
 - (ii) is electrically connected to these transformation assets, under Normal Running Arrangements, excluding electrical connection through assets operating at voltages other than the lower voltage of the transformation assets.

6.3 The following exceptions apply:

- (a) where a source substation operates, under Normal Running Arrangements, with open point(s) on the lower voltage busbar such that there are separate sections of the busbar that are not electrically connected at the same voltage as the busbar, then these separate sections of busbar, and their associated network, shall be considered as separate Network Groups; ~~and~~
- (b) where multiple source substations, with the same lower voltage of transformation assets, operate in parallel, under Normal Running Arrangements, through network operating at the same voltage as the lower voltage of the transformation assets, then these substations and their associated network shall be considered as a single Network Group; ~~and-~~
- (c) where GSP substations do not operate in parallel under Normal Running Arrangements, Connectees connected directly to those GSP substations (those which are assigned Customer Category 0000 according to Paragraph 15.6 of Schedule 17) shall be excluded from the relevant Network Group for that GSP substation.

6.4 Where a Network Group has, under Normal Running Arrangements:

- (a) no demand(load) or demand (generation) connected either within the Network Group, or any lower voltage Network Group associated with it; and
- (b) the Network Group exists solely for the purposes of providing security of supply support to an adjacent Network Group, through closure of open point(s) between such Network Groups,
- (c) then such Network Groups shall be considered as part of the adjacent Network Group to which they provide security of supply support (an example of such instances would be Network Groups that would otherwise be associated with transformers that operate on ‘hot standby’ under Normal Running Arrangements).

6.5 The demand (load or generation) that is considered to be associated with each Network Group is the demand that is connected within the Network Group and also within any lower voltage Network Group that is connected the source Network Group under Normal Running Arrangements.

- 6.6 Figure 8 shows an example network broken down into a number of Network Groups. This example shows how individual Network Groups may include multiple source substations. This is illustrated by the Level 2 group shown as BSP Group 1. In this example both BSP1 and BSP2 are Source Substations which are encompassed within a single Network Group, due to operation of an interconnected 33kV network between these substations under Normal Running Arrangements.
- 6.7 Separate Network Groups may be physically connected by circuits but under Normal Running Arrangements there are no flows between the Network Groups either by means of a normally open switch or normally open circuit breaker. Figure 9 shows the same example network as seen in Figure 8 except now the 33kV circuit interconnection between BSP 1 and BSP 2 is run open, creating two level 2 BSP Network Groups, where previously there was only one, with their own separate Source Substations.
- 6.8 Not all network levels discussed above are applicable across Great Britain with respect to the FCP methodology. In Scotland for example only Level 2 and Level 3 Network Groups are considered as voltages above 33kV are considered transmission and so are not included in the distribution pricing models. In England and Wales all three levels (Level 1, Level 2 and Level 3) as shown in (Figure 9) are considered, although depending on the network voltage transformations the Level 2 Network Group may not be present in some cases, as shown at Primary 5. In this case Primary 5's voltage transformation converts 132kV straight to 11kV and hence there is no intermediate distribution through a BSP, Level 2.

Figure 8 - Example network showing three levels of Network Groups.

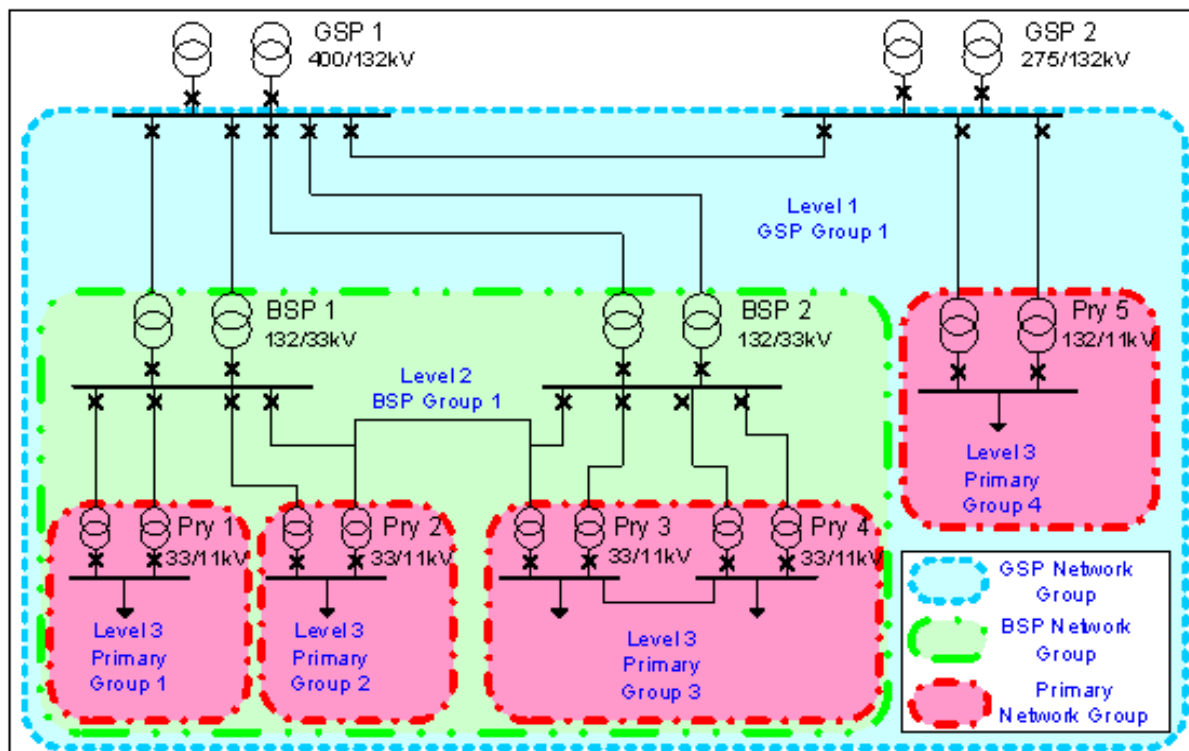


Figure 9 - Example network similar to Figure 8 showing that the addition of the Normally Open Point (NOP) has created two level 2 BSP Network Groups.

