

# Model documentation: Update models & guidance for DCP 361 (Request C01-1)

DCUSA/ElectraLink

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## 1. INTRODUCTION

This document describes charging models and supporting documentation developed for DCUSA to support DCUSA Change Proposal (DCP) 361. The following sections set out the:

- specification for the new files, and references for the model versions used as a starting point;
- revisions to the models; and
- the impact of those changes.

## 2. SPECIFICATION

### 2.1. OVERVIEW

The models and supporting documentation described herein were developed in response to a request to produce versions of the CDCM, ARP and EDCM (LRIC & FCP) models that implement DCP 361 – “Ofgem Targeted Charging Review Implementation: Calculation of Charges”.

The reference files noted below were developed in line with the draft DCUSA text shared with the modelling team on 8<sup>th</sup> April 2020, with an update subsequently provided on 1<sup>st</sup> May 2020. This text set out the changes required to implement DCP 361 against a baseline legal text which reflects the 2020/21 charging models. The legal text includes two options for the treatment of negative residuals within the CDCM and ARP: Option 1 and Option 2. These options have both been modelled and assessed separately.

- DCP361 introduces a new method for revenue matching within the CDCM and EDCM which recovers residual revenue from fixed charges. It also introduces up to four residual charge bands for some tariffs, as well as a “no residual option”. Within the CDCM, there are up to 32 possible combinations of residual charge bands and before-revenue-matching tariffs.

Table 2.1 summarises the mapping between pre-matching and post-matching tariffs. A yellow cell indicates that the corresponding residual band is used to set charges for that particular tariff. There are three options:

- The tariffs have a residual charge calculated for a single residual band.
- The tariffs have no residual charges.
- The tariffs have four residual bands *and* an option for no residual.

Table 2.1: Mapping from pre- to post-matching CDCM tariffs

Tariff (before revenue matching)	Residual				
	None	Band 1	Band 2	Band 3	Band 4
Domestic Aggregated		Domestic Aggregated with Residual			
Domestic Aggregated (Related MPAN)	Domestic Aggregated (Related MPAN)				
Non-Domestic Aggregated	Non-Domestic Aggregated No Residual	Non-Domestic Aggregated Band 1	Non-Domestic Aggregated Band 2	Non-Domestic Aggregated Band 3	Non-Domestic Aggregated Band 4
Non-Domestic Aggregated (Related MPAN)	Non-Domestic Aggregated (Related MPAN)				
LV Site Specific	LV Site Specific No Residual	LV Site Specific Band 1	LV Site Specific Band 2	LV Site Specific Band 3	LV Site Specific Band 4
LV Sub Site Specific	LV Sub Site Specific No Residual	LV Sub Site Specific Band 1	LV Sub Site Specific Band 2	LV Sub Site Specific Band 3	LV Sub Site Specific Band 4
HV Site Specific	HV Site Specific No Residual	HV Site Specific Band 1	HV Site Specific Band 2	HV Site Specific Band 3	HV Site Specific Band 4
Unmetered Supplies		Unmetered Supplies			
LV Generation Aggregated	LV Generation Aggregated				
LV Sub Generation Aggregated	LV Sub Generation Aggregated				
LV Generation Site Specific	LV Generation Site Specific				
LV Generation Site Specific no RP Charge	LV Generation Site Specific no RP Charge				
LV Sub Generation Site Specific	LV Sub Generation Site Specific				
LV Sub Generation Site Specific no RP Charge	LV Sub Generation Site Specific no RP Charge				
HV Generation Site Specific	HV Generation Site Specific				
HV Generation Site Specific no RP Charge	HV Generation Site Specific no RP Charge				

Of the 32 resultant tariffs, 14 have no residual charge and 18 have a residual charge. For those 18 tariffs with a residual charge, revenue is allocated to the tariff based on the total consumption in MWh by that tariff, as a proportion of overall consumption across all 18 tariff types<sup>3</sup>. A p/MPAN/day residual charge is calculated by dividing the revenue allocated to each tariff by the number of MPANs for that tariff and then changing units.

DCP 361 also moves recovery of EDCM residual revenue from the import capacity charge to the fixed charge for final demand customers. Discounts for customers with EHV-level connections to LDNO networks are preserved.

<sup>3</sup> For the purpose of this calculation, the units associated with the related MPAN tariffs are counted towards the relevant domestic or non-domestic tariff.

### 2.1.1. Negative residuals

The legal text has two options for negative residuals within the CDCM – we have modelled each of these options separately and described them both below<sup>4</sup>.

#### Option 1

Option 1 has no additional steps for negative residuals, so overall fixed charges for some users can be negative. This would mean that some users are effectively paid by a DNO on a p/day basis for being connected to the network.

#### Option 2

Option 2 adds some additional calculation steps in the case that there are negative residuals. Firstly, it introduces a “floor” for fixed charges at 0 p/MPAN/day. This means that the net of (i) the before-revenue-matching element of the charge, (ii) the fixed adder for Bad Debt and SoLR payments, and (iii) the negative residual fixed charge cannot be lower than zero.

If the negative residual fixed charge is large enough that this constraint binds, the remaining revenue is redistributed through unit rates for that particular tariff (or that group of tariffs, where multiple tariffs share the same residual charge). Option 2 is discussed in more detail below under “assumptions and clarifications”.

## 2.2. REFERENCE FILES

The following table sets out the reference versions of the charging models used as the starting point for the revisions described in this document.

Table 2.2: Reference files

Model	Model file name	Date sent
CDCM	CDCM_v6_20200130	30/01/2020
ARP	ARP_v6_20200130	30/01/2020
EDCM (LRIC)	EDCM-LRIC_v7_20200130	30/01/2020
EDCM (FCP)	EDCM-FCP_v7_20200130	30/01/2020

## 2.3. NEW FILES

The following table sets out the versions of the charging models and impact assessment provided to the DCP 361 Working Group in response to the request described above.

Table 2.3: New files

Model		Model file name	Date sent
CDCM	Option 1	CDCM_v6(361_Option1)_20200526	26/05/2020
	Option 2	CDCM_v6(361_Option2)_20200526	26/05/2020
ARP	Option 1	ARP_v6(361_Option1)_20200526	26/05/2020
	Option 2	ARP_v6(361_Option2)_20200526	26/05/2020
EDCM (LRIC)		EDCM-LRIC_v7(361)_20200526	26/05/2020

<sup>4</sup> For reference, the pre-DCP361 legal text has a method for managing negative residuals to prevent unit rates (p/kWh) from becoming negative.

EDCM (FCP)		EDCM-FCP_v7(361)_20200526	26/05/2020
Impact assessment	Option 1	ImpactAssessment_C01-1-DCP361_2021-22_20200526_Option1	26/05/2020
	Option 2	ImpactAssessment_C01-1-DCP361_2021-22_20200526_Option2	26/05/2020

We understand that the new files listed in Table 2.3 will be considered by the DCP 361 Working Group and may be shared for consultation.

## 2.4. ASSUMPTIONS AND CLARIFICATIONS

### Before-revenue-matching tariffs

The legal text distinguishes between “all-the-way tariffs before revenue matching” and “all-the-way tariffs”, e.g. in Paragraph 92A. As set out in

Table 2.1 above, there are 16 all-the-way tariffs before revenue matching, and 32 all-the-way tariffs after applying residual charges. For non-domestic aggregate, LV site specific, LV sub site specific and HV sub site-specific there are 5 all-the-way tariffs for each all-the-way tariff before revenue matching, and the before-revenue-matching elements of these tariffs must be equal (e.g. the unit rates derived from the 500 MW model must be the same).

One approach could have been to model all 32 all-the-way tariffs throughout the entire model within separate columns. Additional steps would need to be added to ensure that these tariffs match – which would have added significant complexity throughout the entire model.

Instead, we have retained the basic structure of the calculation of the tariffs before revenue matching used in the current charging year models, with 16 columns (one for each tariff) on each sheet. It is only in the later stages of the calculations (revenue matching, rounding, and calculation of net revenue) that we introduce the 32 variants of all-the-way tariffs. This means there is somewhat less consistency of the column structures throughout the model, but it does streamline the model in general. This is also consistent with the care taken in the legal text to distinguish between “all-the-way tariffs before revenue matching” and “all-the-way tariffs”. We clarified and confirmed our intention to approach the model in this way with members of the DCP361 working group.

### Non-domestic aggregated (related MPAN) volumes

The legal text describes the apportionment of residual revenue to each charge as follows:

“apportioning the total value of the residual surplus or residual shortfall to be returned or recovered respectively, via a fixed charge to specific charging bands set out in paragraph [2.5] of Schedule [XX] plus the domestic charging band, on the basis of aggregated consumption of all Final Demand Sites in that band (**including the consumption of any Related MPANs where applicable**), relative to the combined total net consumption for all Final Demand Sites (**including the consumption of any Related MPANs where applicable**) plus the total consumption for unmetered customers.”

The specification document issued alongside the request provides instruction of how to deal with the bolded text in the case of non-domestic aggregate tariffs.

“For the purposes of producing an impact assessment for DCP361, the modelling consultants shall... assume that the split of sites and volumes between bands for “Non-Domestic Aggregated (Related MPANs)” are equal to the split for “Non-Domestic Aggregated” tariffs (described as “LV NHH” in the TCR impact assessment).”

This assumption is only for the purpose of producing the IA – in principle other assumptions could be used when setting charges. We have therefore included functionality within the model to add a separate distribution across bands of Non-Domestic Aggregated (Related MPAN) volumes.

### Negative residuals for shared residual charges

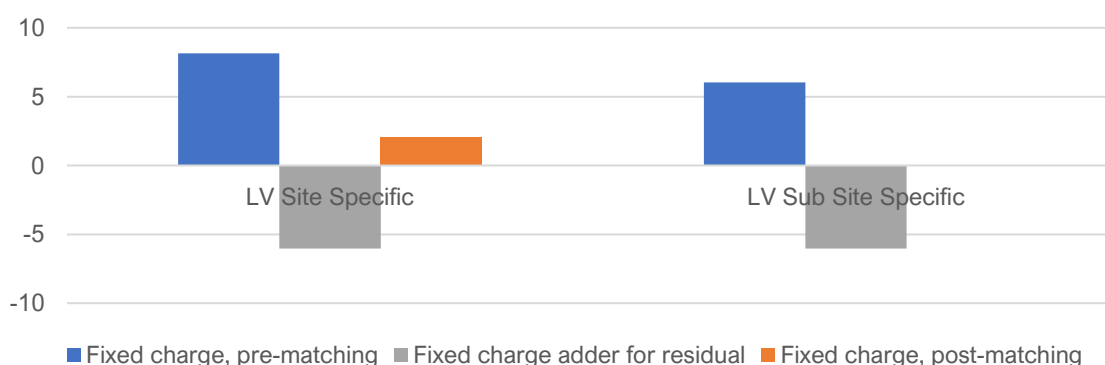
Option 2 for the treatment of negative residual fixed charges states:

“Where a residual surplus exists, and it is not possible to apply the charge from any charging band, as it reduces the fixed components of the relevant all-the-way tariff to less than zero (post allocation of pass-through costs in step 5), then the total fixed charge element of that all-the-way tariff will be capped at zero.”

Some all-the-way tariffs before revenue matching share the same residual charge. For example, “LV Site Specific Band 1” and “LV Sub Site Specific Band 1” both apply the residual charge “Non-domestic LV connected without a MIC as a basis for its current charge (Charging Band 1)”. However, the before-revenue-matching elements of the fixed charge for LV Site Specific and LV Sub Site Specific may in principle be different. In this case, we have assumed that the cap at zero on the all-the-way tariff only applies for whichever of the tariffs before revenue matching has the lower fixed charge. This means that the tariffs before revenue matching will have the same residual charge applied, but that in the case of negative residuals, they may not both be reduced to zero.

Figure 2.1 gives an example of how fixed charge components for these two tariffs are affected by a negative residual. The shared fixed charge adder is capped at the negative of the lesser of the two tariff’s pre-matching fixed charges. The rest of the residual is recovered by reducing unit rates – even though the “LV Site Specific” tariff still has a positive fixed charge post-matching.

Figure 2.1: LV Site Specific (left) & Sub Site Specific (right) fixed charge components with a negative residual (band 1), LPN, Option 2



## Negative unit rates for shared residual charges

Option 2 then states:

“The remaining residual surplus will be returned to all Final Demand Sites within that charging band by applying a fixed charge adder (p/kWh) across all unit rates. If this procedure would result in negative value for any tariff component, then that tariff component is set to zero...”

As with fixed charges, where a pair of tariffs before revenue matching share the same residual charges, the check on whether the fixed charge adder on unit rates would result in a negative value for any tariff component is based on the lowest before-revenue-matching unit rate across that pair.

This will result in customers in the same band paying different residual bills, as they consume different volumes of kWh.

## Matching forecast and target revenue with negative unit rates

The last part of the legal text for Option 2 states that when tariff components are set to zero, “the unit charge adder figure is modified to the extent necessary to match forecast and target revenue”. We have assumed that this requires a solution similar to the previous revenue matching algorithm, with the key difference being that a target amount of residual revenue is recovered from a single tariff only, meaning there are only three unit-rates against which the constrained adder calculation can be calculated. The implementation of this algorithm for DCP361 looks very different but is achieving something quite similar.



The two “Related MPAN” tariffs no longer face a residual charge component. When the residual is positive, they share the same unit rate charges as the equivalent “Aggregated” tariffs (e.g. “Domestic Aggregated” & “Domestic Aggregated (Related MPAN)”). When the residual is negative, their unit rate charges may diverge from the equivalent “Aggregated” tariffs. This can create a situation in which customers pay less for kWhs charged to their main meter than for kWhs charged to their related meter.

## Rules for merging residual bands with fewer than two final demand sites

Paragraph 92B of Schedule 16, and paragraph 18.18 of Schedules 17 and 18 set out rules for combining residual bands if the count of final demand sites at any band is less than two. The charging models submitted impose three assumptions when implementing these rules:

- The count of final demand sites in the EDCM model should be scaled for “proportion the year as a customer”. For example, if a band contains two final demand sites, of which one was only a customer for half the year, the count of final demand sites would be 1.5.
- The count of final demand sites in the EDCM model should *not* be scaled for LDNO-connected customers. For example, if a band contains two final demand sites, of which one is connected to part of the network owned by an LDNO, the count of final demand sites would be 2.0.
- The eight possible combinations for grouping residual bands should be adopted in accordance with the preference order given in Figure 2.2. This preference order implements our interpretation of the logic described in the draft text.<sup>5</sup>

For example, if there is one final demand site in each band, the first acceptable combination is to group bands 1 and 2 together, and bands 3 and 4 together (i.e. band grouping combination 5). This combination would be selected in preference to other acceptable combinations, such as grouping every band together (i.e. band grouping combination 8).

Figure 2.2: Assumed preference order for band grouping combinations

	Band 1	Band 2	Band 3	Band 4
Band grouping combination 1	1	2	3	4
Band grouping combination 2	1	1	2	3
Band grouping combination 3	1	2	2	3
Band grouping combination 4	1	2	3	3
Band grouping combination 5	1	1	2	2
Band grouping combination 6	1	1	1	2
Band grouping combination 7	1	2	2	2
Band grouping combination 8	1	1	1	1

## 2.5. OUTSTANDING LEGAL TEXT ISSUES

The assumptions we have made above, particularly with respect to negative residual charges would benefit from being reflected within the legal text, to avoid the need for assumptions.

In addition, it is worth bearing in mind that if the negative value of the residual is too large, then it may not be possible to calculate unit rates that can “match forecast and target revenue” while also not having any negative unit rates. In these cases, it is possible that the model will result in errors. For example, if LPN’s expected net revenue

<sup>5</sup> The draft text may permit other interpretations which would permit alternative preference orders.

shortfall for 2021/22 was less than -£158 million, revenue matching in the CDCM model would not solve. LPN's actual forecast net revenue shortfall for 2021/22 is -£66 million.

### 3. MODEL REVISIONS

#### 3.1. STRUCTURAL CHANGES

##### 3.1.1. DCP341 changes

Implementing DCP361 required removing the changes introduced from DCP341 (the addition of three new tariffs throughout the model).

In the CDCM and ARP, the three relevant columns were deleted in:

- ‘ARP\_Load characteristics’. ARP only.
- ‘Fixed inputs’.
- ‘Inputs by customer type’.
- ‘Standing charge factors’.
- ‘Volume adjustments’.
- ‘Pseudo-load coefficients’.
- ‘System peak demand’.
- ‘Service model assets’
- ‘Initial unit rates’
- ‘Service model charges’.
- ‘Unit rate charges’.
- ‘Reactive power charges’.
- ‘Capacity charges’.
- ‘Fixed charges’.
- ‘Revenue matching’
- ‘Rounding’.
- ‘Net Revenue Summary’.
- ‘Outputs to other models’.

In the EDCM, the three relevant columns were deleted in:

- ‘LDNO inputs’.
- ‘LDNO calculations’.
- ‘LDNO tariffs’.

In the CDCM and ARP, the three relevant rows were deleted in tables in:

- ‘ARP\_Inputs by customer type’. ARP only
- ‘Load & Loss characteristics’.
- ‘Customer contributions’.

- **'Tariff summary'**.
- **'Typical bills'**. ARP only

In the EDCM, the three relevant rows were deleted in tables in

- **'LDNO tariffs transposed'**.

### **3.1.2. Tariffs after revenue matching**

After removing the DCP341 tariffs, DCP361 required introduction of new post-revenue-matching tariffs in the model. These reflect the combination of different options for residual charges and the before-revenue-matching tariffs as illustrated in

Table 2.1. In the CDCM and ARP, new columns were added in tables in:

- **'Fixed inputs'**.
- **'Inputs by customer type'**.
- **'Revenue matching'**.
- **'Rounding'**.
- **'Net Revenue Summary'**.

In the CDCM and ARP, the new rows were added in tables in:

- **'ARP\_Inputs by customer type'**. ARP only
- **'Tariff summary'**.
- **'Typical bills'**. ARP only
- **'Outputs to other models'**. CDCM only.

## **3.2. ADDITIONAL OR MODIFIED INFORMATION SECTIONS**

In the CDCM, EDCM and ARP, changes were made in the following sheets:

- **'Version control'**.
- **'Model map'**. EDCM only.
- **'Index'**.

## **3.3. ADDITIONAL OR MODIFIED INPUT SECTIONS**

In the CDCM and ARP, changes were made in the following sheets:

- **'Fixed inputs'**. A new subsection for revenue matching inputs was added. It contained flags which define how residual charges are applied and band grouping configurations for post-revenue-matching tariffs.
- **'Inputs by customer type'**. Input 102-B was heavily reworked to break input volumes down into residual bands, for all the way tariffs, LDNO LV tariffs and LDNO HV tariffs. A new input section (Input 102-C) was added for distributing Non-Domestic Aggregated (Related MPAN) volumes across residual bands (when allocating revenue to bands). The input sections for previous year tariffs and revenue (Input 102-E and Input 102-F) were reworked to reflect post-revenue matching tariffs.

In the EDCM, changes were made in the following sheets:

- **'Fixed inputs'**. Added LDNO-specific discounts to general parameter inputs; minimum number of demand sites per band; and band grouping combinations.
- **'Tariff inputs'**. Added metered import consumption, and flags for residual band and final demand sites.

### 3.4. ADDITIONAL OR MODIFIED CALCULATION SECTIONS

In the CDCM and ARP, changes were made in the following sheets:

- **'Volume adjustments'**. This sheet has been very heavily reworked to inform later sheets. This sheet now calculates volumes aggregated across all bands, and volumes separated out by band. It does this for both separate all the way, LDNO LV, and LDNO HV tariffs, and total discount tariffs. This sheet also collects the calculated volumes in a three-level structured table so that these can be imported onto the revenue matching and net revenue summary sheets.
- **'Revenue matching'**. This sheet was very heavily reworked to implement DCP 361. It has three sections:
  - "Pre-matching net revenue calculations" determines how much revenue is calculated from before-revenue-matching tariffs and imports other inputs for use in the calculations
  - "Residual charge calculation" is used to calculate the initial fixed and unit rate residual charges.
  - "Adjustments for negative fixed charges" is used for Option 2 to adjust charges if a negative residual applies. This applies the floor of 0 p/day to the fixed charge and then redistributes the revenue through unit rates.
  - "Final adders" collects together calculated residual charges and passes them on to subsequent sheets.
- **'Rounding'**. This sheet was updated to ensure consistency after the addition of the post-revenue matching tariffs.
- **'Net revenue summary'**. This sheet was updated for consistency after the addition of the post-revenue matching tariffs. Some minor adjustments and formatting improvement were made throughout the sheet.

In the EDCM, changes were made in the following sheets:

- **'Import capacity'** sheet adapted to remove the import capacity components associated with the residual.
- **'Residual bands'** sheet added to split residual revenue between bands.
- **'Residual charge'** sheet added to calculate charges for each customer.
- **'Fixed'** sheet adapted to introduce a residual charge component.
- **'Revenue'** sheet adapted to move residual from capacity to fixed charge component.

### 3.5. ADDITIONAL OR MODIFIED OUTPUT SECTIONS

In the CDCM and ARP, changes were made in the following sheets to ensure consistency after the addition of the post-revenue-matching tariffs:

- **'Tariff summary'**.
- **'Outputs to other models'**. CDCM only.

In the EDCM, changes were made in the following sheets:

- **'Revenue summary'** sheet adapted to move residual from capacity to fixed charge component.

## **4. IMPACT STATEMENT**

### **4.1. SUMMARY**

The impact assessment submitted under this service request sets out the impact of DCP 361 on all outputs of the CDCM for the 2021/22 charging year, and provides summary charts for the following outputs of specific interest:

- Typical bills per MPAN (p/MPAN/day, % change)
- Average bills per kWh (p/kWh, % change)
- Net revenue per tariff (£/year, % change)
- A-typical bills per MPAN (p/MPAN/day, % change)

Separate impact assessments have been prepared for Option 1 and Option 2. Impacts only differ for LPN, which is the only DNO with a negative residual.

The impact assessment does not include EDCM outputs because we do not have access to actual EDCM data. Likewise, all impacts are presented before resolution of inter-model circularities, as we do not have the actual EDCM data needed to do that.

### **4.2. INPUTS**

Inputs were taken from:

- published CDCM models for the 2021/22 charging year; and
- the 'Frontier\_summary\_of\_bill\_impact\_data' workbook published alongside Ofgem's final TCR decision – containing a split of volumes and MPANs by residual charging band based on published CDCM models for the 2019/20 charging year.

### **4.3. VALIDATION**

The following steps were used to check and validate post-DCP 361 models:

- expected revenue is recovered;
- generation tariffs are not affected;
- “Unmetered Supply” tariffs are not affected unless the residual is negative;
- workbook review software used to demonstrate model changes and highlight inconsistent formulae;
- impact assessment can be replicated manually; and
- impact assessment results sense-checked and explained.

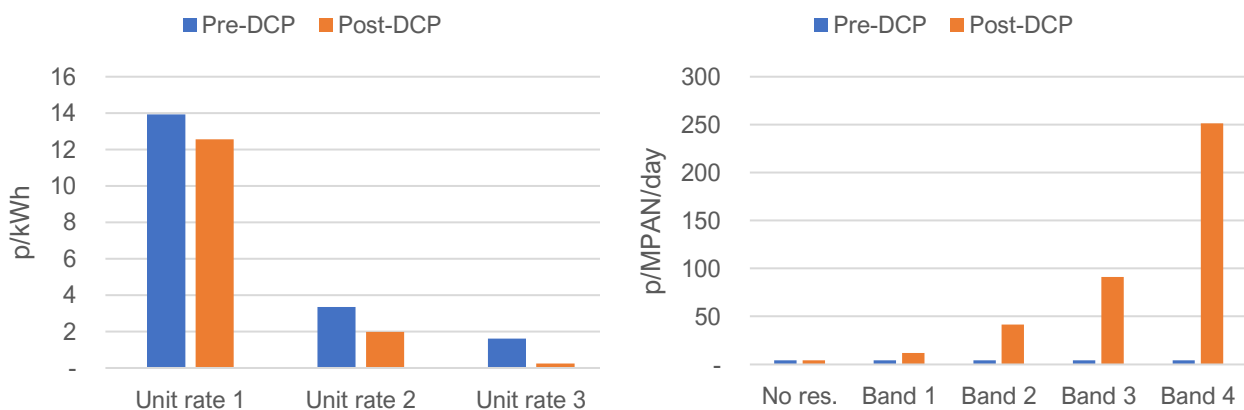
### **4.4. IMPACTS**

#### **4.4.1. Impacts on tariffs**

The impact of DCP 361 is to move the residual adder from the unit rate to the fixed charge for all relevant demand tariffs. Generation tariffs are unaffected.

Where the residual is positive, unit rate charges decrease and fixed charges increase. Figure 4.1 gives an example for the “Non-Domestic Aggregated” tariff.

Figure 4.1: Unit rate (left) and fixed (right) charge components, Non-Domestic Aggregated, SPMW



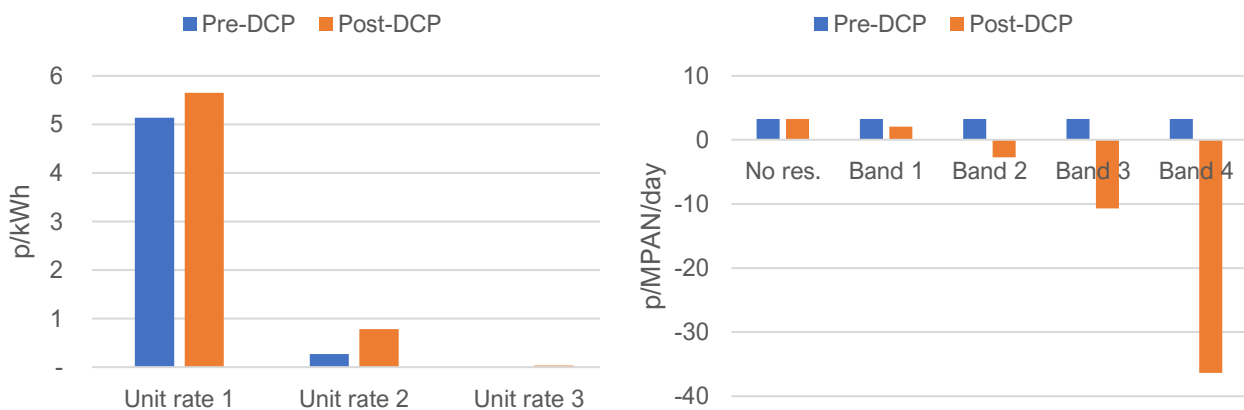
Where the residual is negative, the opposite is true - unit rate charges increase and fixed charges decrease.

The “Domestic Aggregated (Related MPAN)” or “Non-Domestic Aggregated (Related MPAN)” tariffs are affected differently. Their unit rates are equal to the equivalent “Aggregated” tariff (so reduce when the residual is positive and increase when it is negative), but they do not have a fixed charge component, so do not receive a residual fixed charge.

Options 1 and 2 introduce alternative rules for applying negative residuals.

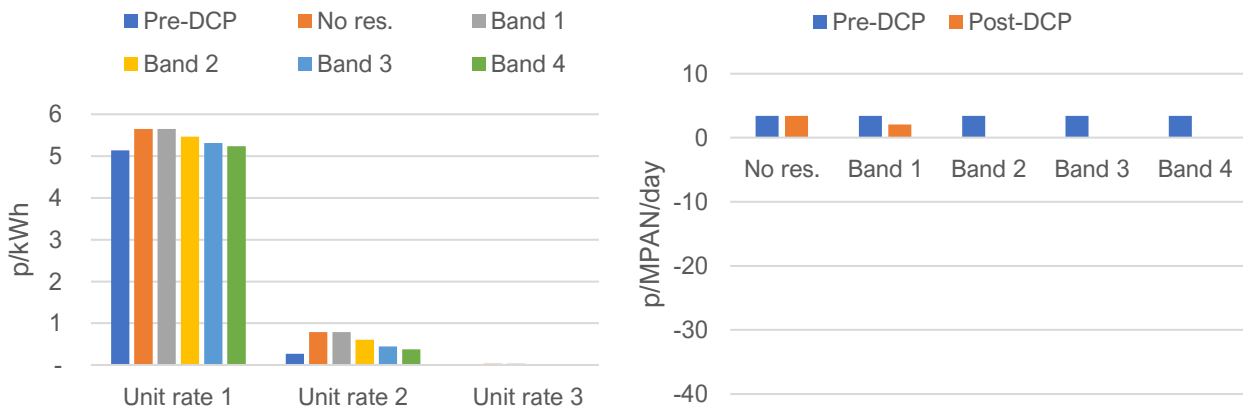
Option 1 permits fixed charges to turn negative – as shown in Figure 4.2, for the same “Non-Domestic Aggregated” tariff in the LPN area.

Figure 4.2: Unit rate (left) and fixed (right) charge components, Non-Domestic Aggregated, LPN, Option 1



Option 2 caps fixed charges at zero and recovers the remaining net revenue by reducing unit rate charges – as shown in Figure 4.3. In this example, Option 2 prevents negative fixed charges for bands 2, 3 and 4 by reducing unit rates. Unit rate 3 reaches the zero unit rate limit for bands 3 and 4. There are some examples of unit rate 2 reaching the zero limit in the LPN area, but no instances of all three unit rates reaching zero.

Figure 4.3: Unit rate (left) and fixed (right) charge components, Non-Domestic Aggregated, LPN, Option 2



The “LV Site Specific” and “LV Sub Site Specific” tariffs receive the same banded residual adders post-DCP 361, which causes an additional interaction under Option 2 when the residual is negative. The shared banded fixed charge cannot result in negative fixed charges for either tariff. In practice, this implies that “LV Sub Site” tariffs will face negative residual adders on their unit rate charges even though their fixed charges have not yet reached zero.

DCP 361 only affects “Unmetered Supplies” tariffs when the residual is negative. “Unmetered Supplies” continue to receive a unit rate residual adder, but when the residual is negative the adder is no longer reduced in response to other tariffs reaching the non-negative unit rate constraint.

#### 4.4.2. Impacts on typical bills

The effect of DCP 361 on customer’s annual bills depends on their tariff, residual band, and energy usage. Where the residual is positive, customers are likely to benefit if:

- they are in a low residual band for their tariff group (e.g. band 1 or 2);
- their energy usage is greater than the average within their residual band; or
- they are on an “LV Sub Site Specific” tariff (which shares a banded residual charge with “LV Site Specific” tariffs); or
- they are on a “Domestic Aggregated (Related MPAN)” or “Non-Domestic Aggregated (Related MPAN)” tariff (whose share of the residual is now recovered from “Domestic Aggregated” and “Non-Domestic Aggregated” charges).

Where the residual is negative, the opposite will be true.

Figure 4.4 and Figure 4.5 present the impact of DCP 361 on annual bills for the typical customer on each post-matching tariff – under Options 1 and 2 respectively. Values only differ between the two tables for LPN.

Blanks arise when there are no volumes to measure bill impacts with. The four “no residual” tariffs are all unaffected by DCP361, so could also be interpreted as “0.0%”.



Figure 4.4: % change in typical bills per MPAN per year, Option 1

Post-matching tariff	ENWL	NPgN	NPgY	SSEH	SSES	SPD	SPMW	LPN	SPN	EPN	EMID	WMID	SWEST	SWALES
Domestic Aggregated with Residual	-0.1%	0.1%	-0.1%	4.6%	0.2%	1.5%	0.0%	0.3%	0.0%	0.0%	-0.1%	0.0%	0.2%	0.0%
Domestic Aggregated (Related MPAN)	-57.2%	-80.0%	-75.6%	-52.2%	-57.9%	-88.9%	-80.2%	36.7%	-54.8%	-32.8%				
Non-Domestic Aggregated No Residual														
Non-Domestic Aggregated Band 1	0.1%	0.1%	0.2%	0.8%	0.1%	1.0%	0.0%	1.6%	0.0%	0.0%	-0.1%	0.0%	0.2%	0.0%
Non-Domestic Aggregated Band 2	0.1%	0.1%	0.2%	1.2%	0.2%	1.4%	0.0%	2.2%	0.0%	0.0%	-0.1%	0.1%	0.3%	0.1%
Non-Domestic Aggregated Band 3	0.1%	0.1%	0.3%	1.2%	0.2%	1.5%	0.0%	2.4%	0.0%	0.0%	-0.1%	0.1%	0.4%	0.1%
Non-Domestic Aggregated Band 4	0.1%	0.1%	0.3%	1.3%	0.2%	1.5%	0.1%	2.5%	0.0%	0.0%	-0.1%	0.1%	0.4%	0.1%
Non-Domestic Aggregated (Related MPAN)	-60.0%	-69.9%	-68.9%	-41.1%	-51.8%	-57.0%	-77.5%	50.0%	-46.8%	-31.3%				
LV Site Specific No Residual														
LV Site Specific Band 1	5.6%	8.4%	4.0%	2.2%	1.1%	2.6%	16.9%	0.2%	0.4%	1.0%	2.0%	1.3%	12.5%	1.8%
LV Site Specific Band 2	5.7%	8.5%	4.1%	2.2%	1.1%	2.6%	17.1%	0.2%	0.4%	1.0%	2.0%	1.3%	12.7%	1.8%
LV Site Specific Band 3	5.7%	8.6%	4.1%	2.2%	1.1%	2.7%	17.2%	0.2%	0.4%	1.0%	2.0%	1.3%	12.7%	1.8%
LV Site Specific Band 4	5.8%	8.6%	4.1%	2.2%	1.1%	2.7%	17.2%	0.2%	0.4%	1.0%	2.0%	1.3%	12.8%	1.8%
LV Sub Site Specific No Residual														
LV Sub Site Specific Band 1	-12.6%	-40.9%	-37.8%	-35.4%	-25.3%	-34.4%	-14.1%	8.6%	-21.8%	-6.7%	-22.1%	-14.3%	-25.3%	-29.3%
LV Sub Site Specific Band 2	-12.9%	-41.0%	-37.9%	-35.6%	-25.6%	-34.5%	-14.1%	8.6%	-21.9%	-6.7%	-22.2%	-14.3%	-25.4%	-29.4%
LV Sub Site Specific Band 3	-13.0%	-41.0%	-38.0%	-35.7%	-25.7%	-34.5%	-14.1%	8.6%	-21.9%	-6.7%	-22.2%	-14.3%	-25.4%	-29.4%
LV Sub Site Specific Band 4	-13.1%	-41.1%	-38.1%	-35.8%	-25.8%	-34.5%	-14.1%	8.6%	-21.9%	-6.7%	-22.3%	-14.3%	-25.4%	-29.5%
HV Site Specific No Residual														
HV Site Specific Band 1	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.3%	-0.5%	-3.2%	-0.2%	0.0%	0.0%	0.1%	0.1%	-0.1%
HV Site Specific Band 2	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.3%	-0.5%	-3.2%	-0.2%	0.0%	0.0%	0.1%	0.1%	-0.1%
HV Site Specific Band 3	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.3%	-0.5%	-3.2%	-0.2%	0.0%	0.0%	0.1%	0.1%	-0.1%
HV Site Specific Band 4	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.3%	-0.5%	-3.3%	-0.2%	0.0%	0.0%	0.1%	0.1%	-0.1%
Unmetered Supplies	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LV Generation Aggregated	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
LV Sub Generation Aggregated	0.0%			0.0%	0.0%	0.0%	0.0%							
LV Generation Site Specific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LV Sub Generation Site Specific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
HV Generation Site Specific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Figure 4.5: % change in typical bills per MPAN per year, Option 2

Post-matching tariff	ENWL	NPgN	NPgY	SSEH	SSES	SPD	SPMW	LPN	SPN	EPN	EMID	WMID	SWEST	SWALES
Domestic Aggregated with Residual	-0.1%	0.1%	-0.1%	4.6%	0.2%	1.5%	0.0%	0.3%	0.0%	0.0%	-0.1%	0.0%	0.2%	0.0%
Domestic Aggregated (Related MPAN)	-57.2%	-80.0%	-75.6%	-52.2%	-57.9%	-88.9%	-80.2%	36.7%	-54.8%	-32.8%				
Non-Domestic Aggregated No Residual														
Non-Domestic Aggregated Band 1	0.1%	0.1%	0.2%	0.8%	0.1%	1.0%	0.0%	1.6%	0.0%	0.0%	-0.1%	0.0%	0.2%	0.0%
Non-Domestic Aggregated Band 2	0.1%	0.1%	0.2%	1.2%	0.2%	1.4%	0.0%	2.3%	0.0%	0.0%	-0.1%	0.1%	0.3%	0.1%
Non-Domestic Aggregated Band 3	0.1%	0.1%	0.3%	1.2%	0.2%	1.5%	0.0%	2.4%	0.0%	0.0%	-0.1%	0.1%	0.4%	0.1%
Non-Domestic Aggregated Band 4	0.1%	0.1%	0.3%	1.3%	0.2%	1.5%	0.1%	2.5%	0.0%	0.0%	-0.1%	0.1%	0.4%	0.1%
Non-Domestic Aggregated (Related MPAN)	-60.0%	-69.9%	-68.9%	-41.1%	-51.8%	-57.0%	-77.5%	50.0%	-46.8%	-31.3%				
LV Site Specific No Residual														
LV Site Specific Band 1	5.6%	8.4%	4.0%	2.2%	1.1%	2.6%	16.9%	0.9%	0.4%	1.0%	2.0%	1.3%	12.5%	1.8%
LV Site Specific Band 2	5.7%	8.5%	4.1%	2.2%	1.1%	2.6%	17.1%	0.9%	0.4%	1.0%	2.0%	1.3%	12.7%	1.8%
LV Site Specific Band 3	5.7%	8.6%	4.1%	2.2%	1.1%	2.7%	17.2%	0.9%	0.4%	1.0%	2.0%	1.3%	12.7%	1.8%
LV Site Specific Band 4	5.8%	8.6%	4.1%	2.2%	1.1%	2.7%	17.2%	0.9%	0.4%	1.0%	2.0%	1.3%	12.8%	1.8%
LV Sub Site Specific No Residual														
LV Sub Site Specific Band 1	-12.6%	-40.9%	-37.8%	-35.4%	-25.3%	-34.4%	-14.1%	0.5%	-21.8%	-6.7%	-22.1%	-14.3%	-25.3%	-29.3%
LV Sub Site Specific Band 2	-12.9%	-41.0%	-37.9%	-35.6%	-25.6%	-34.5%	-14.1%	0.4%	-21.9%	-6.7%	-22.2%	-14.3%	-25.4%	-29.4%
LV Sub Site Specific Band 3	-13.0%	-41.0%	-38.0%	-35.7%	-25.7%	-34.5%	-14.1%	0.2%	-21.9%	-6.7%	-22.2%	-14.3%	-25.4%	-29.4%
LV Sub Site Specific Band 4	-13.1%	-41.1%	-38.1%	-35.8%	-25.8%	-34.5%	-14.1%	0.1%	-21.9%	-6.7%	-22.3%	-14.3%	-25.4%	-29.5%
HV Site Specific No Residual														
HV Site Specific Band 1	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.3%	-0.5%	-3.4%	-0.2%	0.0%	0.0%	0.1%	0.1%	-0.1%
HV Site Specific Band 2	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.3%	-0.5%	-3.4%	-0.2%	0.0%	0.0%	0.1%	0.1%	-0.1%
HV Site Specific Band 3	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.3%	-0.5%	-3.4%	-0.2%	0.0%	0.0%	0.1%	0.1%	-0.1%
HV Site Specific Band 4	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.3%	-0.5%	-3.5%	-0.2%	0.0%	0.0%	0.1%	0.1%	-0.1%
Unmetered Supplies	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LV Generation Aggregated	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
LV Sub Generation Aggregated	0.0%			0.0%	0.0%	0.0%	0.0%							
LV Generation Site Specific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LV Sub Generation Site Specific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
HV Generation Site Specific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

### 4.4.3. Impacts on atypical bills

DCP 361 has very little impact on typical bills for some tariffs because the typical customer would have contributed the almost the same amount of revenue through the unit rate residual adder as it now would under a fixed charge residual adder, notwithstanding other interactions between tariffs.

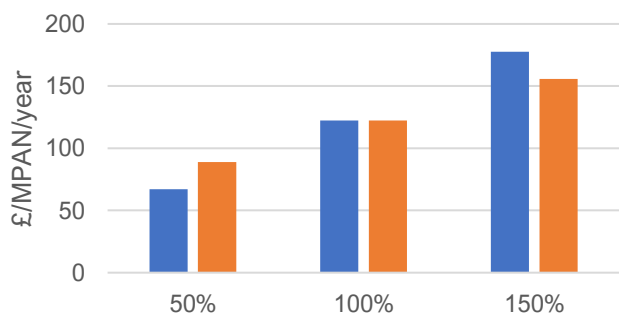
Customers on these tariffs still face an impact if their energy consumption is *atypical*. The figures below show annual bills for customers whose energy consumption is 50%, 100% and 150% of the average for customers in their residual band.

When the residual is positive, DCP 361 reduces variation of annual bills with respect to energy consumption (which was the intention of Ofgem's Targeted Charging Review decision). When the residual is negative, DCP 361 increases variation of annual bills with respect to energy consumption (e.g. for LPN).

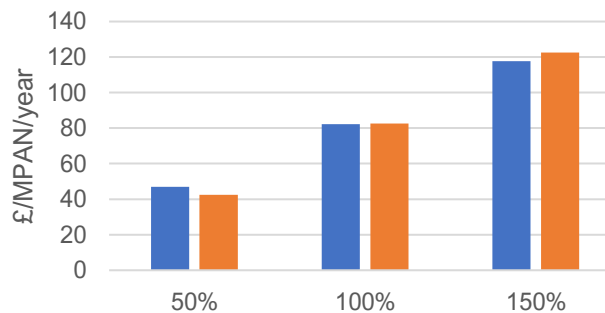
DCP 361 only affects "Unmetered Supplies" tariffs when the residual is negative.

Figure 4.6: Annual bills pre- & post-DCP 361 (Option 2), by proportion of average energy consumption within a residual band – SPMW (left), LPN (right) – Domestic Aggregated with Residual (top), Domestic Aggregated (Related MPAN) (middle), Unmetered Supplies (bottom)

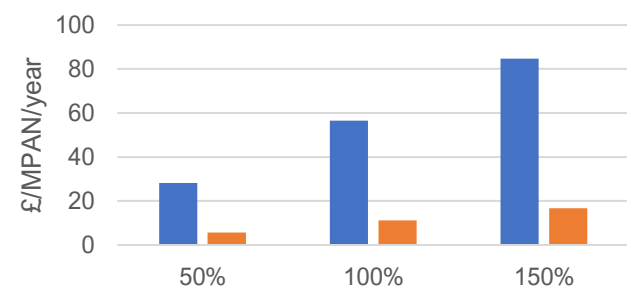
■ Domestic Aggregated with Residual, SPMW, Pre-DCP  
 ■ Domestic Aggregated with Residual, SPMW, Post-DCP



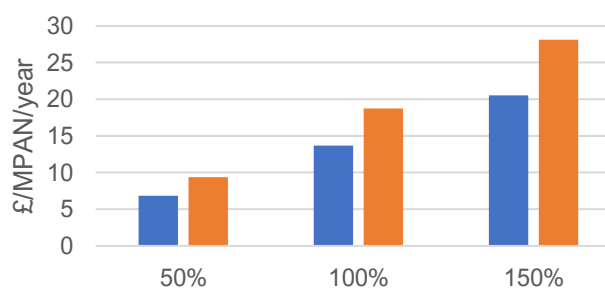
■ Domestic Aggregated with Residual, LPN, Pre-DCP  
 ■ Domestic Aggregated with Residual, LPN, Post-DCP



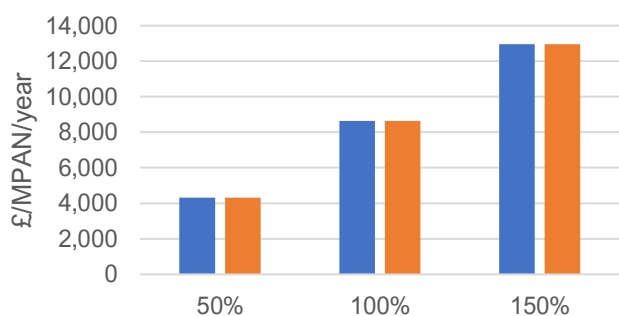
■ Domestic Aggregated (Related MPAN), SPMW, Pre-DCP  
 ■ Domestic Aggregated (Related MPAN), SPMW, Post-DCP



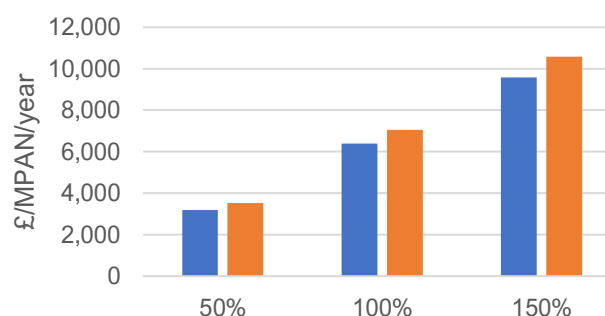
■ Domestic Aggregated (Related MPAN), LPN, Pre-DCP  
 ■ Domestic Aggregated (Related MPAN), LPN, Post-DCP



■ Unmetered Supplies, SPMW, Pre-DCP  
 ■ Unmetered Supplies, SPMW, Post-DCP



■ Unmetered Supplies, LPN, Pre-DCP  
 ■ Unmetered Supplies, LPN, Post-DCP





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