



Model documentation: Update
models & guidance for DCP 332 and
DCP 333 (Request B01-I)

18 April 2019

DCUSA/ElectraLink

CONFIDENTIAL

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I. INTRODUCTION

This document describes charging models and supporting documentation developed for DCUSA. The following sections set out the:

- specification for the new files, including the identity of the reference files for the revisions noted here within and the new file names; and
- revisions to the models, and the impact of those changes.

2. SPECIFICATION

The models and supporting documentation described herein were developed in response to a request to produce versions of the CDCM and EDCM (LRIC & FCP) models that implement DCP 332 – “*Appropriate treatment and allocation of Last Resort Supply Payment claim costs*” and DCP 333 – “*Appropriate treatment and allocation of eligible use of system bad debt costs*”. The reference files noted below were developed in line with the draft DCUSA text first shared with the modelling team on 12 February 2019, and the update shared on 09 April 2019. In all other areas, we assumed that the model should implement the 01 April 2020 DCUSA Charging Methodologies Pre-Release (released 09/10/2018).

The specification set out that we should implement two versions of each model, using “Option D” for DCP 332 (affecting the CDCM and EDCM) and versions which use both “Option C” and “Option D” for DCP 333 (affecting the CDCM and EDCM). Note that the way the changes have been implemented within the EDCM (taking the calculated fixed adders directly from the CDCM) means that a single version of the model works for both DCP 333 options.

The two DCPs each calculate a fixed charge adder for a subset of tariff categories, to recover Supplier of Last Resort and Bad Debt costs respectively. The fixed charge adder is determined by apportioning the total revenue related to each of these costs across all of the relevant MPANs in the DNO’s charging base, including all the way customers and all LDNO customers. The fixed charge adder is included in the charge *after* LDNO discounts are applied – that means that LDNO customers do not receive a discount on this element of the charge.

The updated specification from 09 April 2019 provides additional clarity on how discounting and rounding should be set out in the models. It also revolves an issue identified during the initial modelling request relating to interactions between the models. Incremental changes which reflect this updated specification compared to the original from 12 February 2019 are noted in this document as “**Updated 18 April 2019**”.

2.1. REFERENCE FILES

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

Table 2.1: Reference files

Model	Model file name	Date sent
CDCM	CDCM_v3(332D_333C)_20190328.xlsx CDCM_v3(332D_333D)_20190328.xlsx (Developed from CDCM_v3_20181016.xlsx)	28/03/2019
EDCM (LRIC)	EDCM-LRIC_v4(332_333)_20190328.xlsx	28/03/2019

Model	Model file name	Date sent
	(Developed from EDCM-LRIC_v4_20181102.xlsx)	
EDCM (FCP)	EDCM-FCP_v4(332_333)_20190328.xlsx (Developed from EDCM-FCP_v4_20181102.xlsx)	28/03/2019

2.2. NEW FILES

The following table sets out the versions of the charging models and impact assessment provided to the DCP 332 and DCP 333 Working Group in response to the request described above.

Table 2.2: New files

Model	Model file name	Date sent
CDCM	CDCM_v3(332D_333C)_20190418.xlsx CDCM_v3(332D_333D)_20190418.xlsx	18/04/2019
EDCM (LRIC)	EDCM-LRIC_v4(332_333)_20190418.xlsx	18/04/2019
EDCM (FCP)	EDCM-FCP_v4(332_333)_20190418.xlsx	18/04/2019
CDCM Impact assessment	CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333C_Base.xlsx CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333C_SoLR.xlsx CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333C_SoLR+Debt.xlsx CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333D_Base.xlsx CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333D_SoLR.xlsx CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333D_SoLR+Debt.xlsx	18/04/2019

The ARP was not commissioned under this service request. If required at a later date (alongside a service 2 request for the other charging models), we would expect it to be commissioned as a service 1 + 2 request.

We understand that the new files listed in Table 2.2 will be considered by the DCP 332 and 333 Working Group and may be shared for consultation.

2.3. NEW MODELLING SPECIFICATION ASSUMPTIONS AND CLARIFICATIONS

One further clarification was provided on the 12 February 2019 specification. The working group clarified that the modelling should treat the new costs as “additional revenue [so it’s possible to] clearly see that the only change to tariffs is on the fixed charge driven by the new SoLR/bad debt revenue”.

Update 18 April 2019: In the updated modelling request there are no substantive changes to the draft legal text, but the specification includes two important points. Firstly, with respect to the model interactions, the definition of ‘EDCM & Certain Interconnector Revenue’ in Schedule 15 has been amended as follow:

“means, at any time and in respect of a Regulatory Year, the Company’s reasonable estimate (at that time) if: (a) the revenue to be recovered from tariffs calculated under the Charging methodology set out in Schedule 17 or 18 (as applicable to the Company) less any revenue calculated under that methodology which relates to the recovery of DNO Party Supplier of Last Resort or Eligible Bad Debt pass-through costs; plus (b) to the extent relevant, the revenue to be recovered from the DNO Party-to-DNO Party interconnector charges referred to in paragraph 20.4 of the methodology set out in schedule 17.”

The underlined section summarises how the models are to be updated to remove the potential for double counting i.e. by essentially treating the revenue for Supplier of Last Resort or Eligible Bad Debt costs that is recovered from the EDCM as if it was recovered within the CDCM.

With respect to rounding, the updated specification noted:

"A further usability issue was identified in the way rounding has been applied in the CDCM. It has been suggested that this is presented slightly differently to the first impact assessment by presenting both all-the-way tariffs and LDNO tariffs pre-rounding with a separate step to apply rounding."

2.4. OUTSTANDING LEGAL TEXT ISSUES

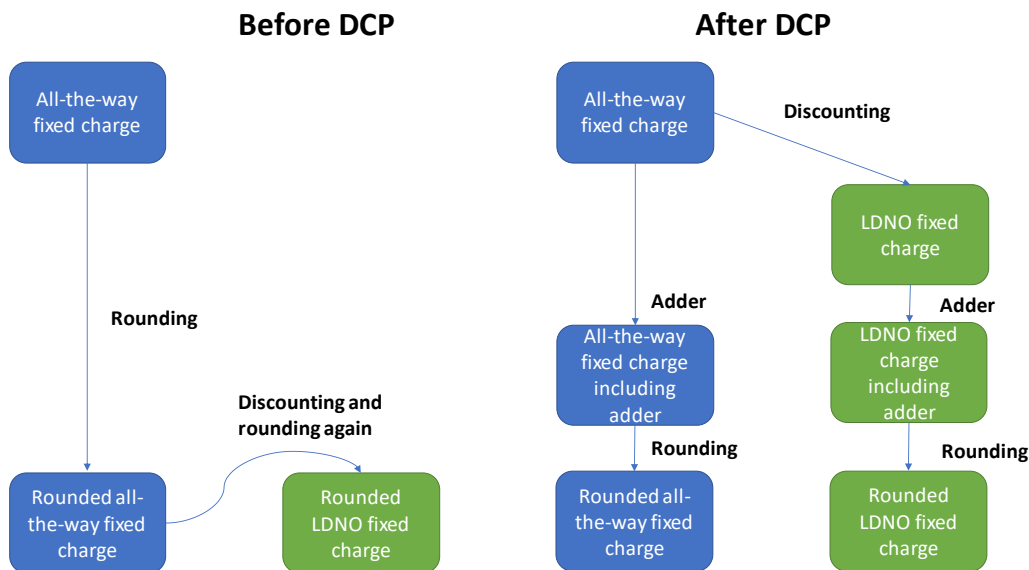
Update 18 April 2019: Both issues raised in the original service request were considered by the working group. The issue related to rounding has been noted and based on feedback from the working group the model structure has been changed in order to make the identified impact more explicit, as described above. The issue related to interactions between the models has been addressed by the working group changing one of the definitions in Schedule 15 (as described above), with corresponding updates and modifying the EDCM outputs to match.

During the course of completing the impact assessment, we have identified two other minor issues with the legal text drafting for the working group to consider, which we believe should be addressed.

The first issue relates to the application of rounding when calculating LDNO discounted tariffs. In the base version of the model, a rounded all-the-way charge is calculated, LDNO discounts are applied to this, and then the LDNO charge is rounded again. Therefore, rounding was applied twice during the calculation of LDNO charges, whereas for all other customers this was only applied once. This was consistent with the previous implementation of the models used up to 2019/20.

However, because of the order in which DCP332 and DCP333 require the fixed charge adder to be included (after discounting), it is no longer appropriate for the LDNO discount to be applied to the final all the way tariff, because this already includes the fixed charge adder. We have therefore restructured how the rounding and discounting applications are carried out. As part of this, we have removed the "double rounding" of the LDNO discounts, as this is not specified within the legal text and retaining this would have required some additional assumptions to be made. As a result, the rounding of charges is now more consistent for both LDNO and all-the-way customers – this is illustrated in the figure.

Figure 2.1: Illustration of issue related to LDNO discounts and rounding



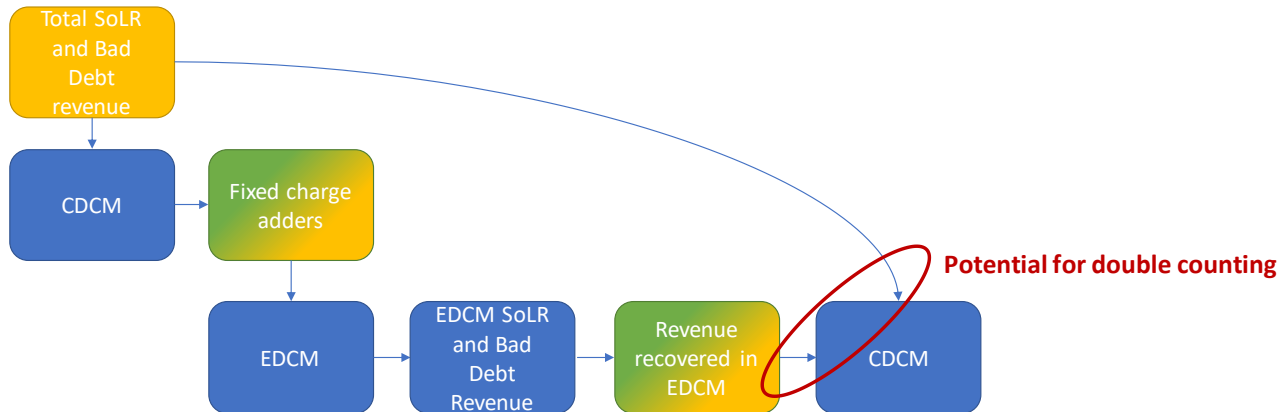
However, this means that there are some 0.001p/kWh, 0.01p/MPAN/day and 0.01/kVA/day changes in charges for LDNO tariffs that are not related to the new revenue items included in the models. These have very minor impacts on bills (~0.1%).

Update 18 April 2019: In the updated versions of both the CDCM and EDCM, the steps of applying the discounting and then the adder, and then rounding, are explicitly separated out into separate tables.

The second is partially an issue with the specification of the models, but is also related to how the models are used operationally and their interactions when setting charges. Therefore, this issue does not affect the results of the impact assessments when completed on a standalone basis, but would have an impact when setting charges in practice.

DCP 332 and 333 introduce new revenue inputs to the CDCM, based on the update made to Schedule 15 in DCP 334. This is used to calculate a fixed charge adder which is then applied to charges calculated in both the CDCM and the EDCM. However, the CDCM also includes an input for revenue recovered within the EDCM, which will, with the changes made to the models, also include the EDCM share of the revenue related to Supplier of Last Resort and Bad Debt costs. This means there is a potential to double count some of the revenue from Supplier of Last Resort and Bad Debt costs on the second pass through the CDCM. If, on the second pass through the CDCM, the solution was to decrease the Supplier of Last Resort and Bad Debt revenue entries to account for the fact that some of this revenue had been recovered in the EDCM, this would result in the fixed charge adder decreasing, lowering the tariffs and revenues within the CDCM, which would then subsequently lower the EDCM tariffs.

Figure 2.2: Illustration of possible issue related to model interactions



When operating the suite of models, accounting for the interactions between them, care will need to be taken to ensure that this interaction does not lead to double counting of this revenue, for example by ensuring that the input to the CDCM for revenue recovered within the EDCM does not include revenue related to fixed charge adders. We expect that further minor changes to the legal text and models may be required to address this e.g. by including separate line items within Schedule 15 for Supplier of Last Resort and Bad Debt revenue recovered within the EDCM.

Update 18 April 2019: In the updated versions of the EDCM, the revenue calculated within the EDCM model is modified so as to explicitly exclude the fixed charge adder revenue from the EDCM. This resolves this issue with potential double counting by essentially treating this revenue from the EDCM as if it is recovered by the CDCM, which means for example that it is included in the CDCM revenue target. The CDCM has been modified to ensure that labelling is consistent.

3. MODEL REVISIONS

3.1. STRUCTURAL CHANGES

The following structural changes were made to implement DCP 332 and DCP 333:

- A new sheet was added in the CDCM, **'Fixed charge adder'** which calculates the new fixed charge adders introduced by DCP 332 and DCP 333.

3.2. ADDITIONAL OR MODIFIED INFORMATION SECTIONS

The following revisions were made in the CDCM:

- **'Cover'**. Subtitle updated.
- **'Version control'**. Version control updated (including model date, DCUSA text version, and description of changes).
- **'Model map'**. Updated to account for new sheet ('Discount mapping').
- **'Index'**. Updated to account for revised section structure.

The following revisions were made in the EDCM:

- **'Cover'**. Subtitle updated.
- **'Version control'**. Version control updated (including model date, DCUSA text version, and description of changes).
- **'Index'**. Updated to account for revised section structure.

3.3. ADDITIONAL OR MODIFIED INPUT SECTIONS

The following revisions were made in the CDCM:

- **'Fixed inputs'**. A new table (Input 101-I) was added which maps the CDCM tariff types to the different fixed charge adders introduced by DCP 332 and 333.
- **'Inputs by customer type'**. A new input was added to Input 102-B to enter the numbers of relevant MPANs from the CDCM.
- **'General inputs'**. The revenue inputs table (Input 104-C) was modified to reflect the DCP 334 updates to Schedule 15, which now includes the revenue related Supplier of Last Resort and Bad Debt costs.

The following revisions were made in the EDCM:

- **'General inputs'**. A new table was added to include the revenue related to Supplier of Last Resort and Bad Debt costs (Input 202-G and Input 302-G).
- **'LDNO inputs'**. A new table was added to include the fixed charge adder per customer category as calculated in the updated CDCM (Input 207-B and Input 307-B).

3.4. ADDITIONAL OR MODIFIED CALCULATION SECTIONS

The following revisions were made in the CDCM:

- **‘Revenue matching’**. The revenue matching calculation (Section 115-A) was updated to exclude revenue associated with Supplier of Last Resort and Bad Debt costs. The checks on this sheet were also updated.
- **‘Fixed charge adder’**. This sheet was added (Section 116-A and Section 116-B), which calculates the fixed charge adder by dividing the total revenue for Supplier of Last Resort and Bad Debt costs by the number of MPANs from both the CDCM and the EDCM.

Update 18 April 2019: The fixed charge adder sheet was modified to calculate separately the revenue recovered from the fixed charge adders in the CDCM and the revenue recovered from the fixed charge adders in the EDCM. This happens within the “Checks” section.

- **‘Rounding’**. This sheet was reorganised so that application of the revenue matching adder happens before application of discounts and rounding, such that the fixed charge adders can be included before rounding but after the application of LDNO discounts. This included adding a new inputs section (Section 117-C), adding a new output section for the all-the-way tariffs without fixed charge adders (Section 117-F) and changing the calculation of rounded tariffs (Section 117-G).

Update 18 April 2019: The rounding sheet was restructured to separate out the application of fixed adders and discounting from rounding. The previous Section 117-G was split into two sections, 117-G and 117-H, the former for adders and discounting, and the latter for rounding.

- **‘Net revenue summary’**. This sheet was updated to include a calculation of the net revenue from the fixed adder in Section 118-C and Section 118-E.

Update 18 April 2019: The net revenue summary sheet was modified to split out revenue from the EDCM fixed adder and revenue from the CDCM fixed adder, within Section 118-C and Section 118-E. Note that this implicitly treats the all of revenue from the fixed charge adder as CDCM revenue, even where that revenue is actually recovered through the EDCM.

The following revisions were made in the EDCM:

- **‘Import capacity’**. This sheet was updated so that the target revenue excludes revenue associated with Supplier of Last Resort and Bad Debt costs (Section 208-G and Section 308-G).
- **‘LDNO Calculations’**. This sheet was updated in line with the Rounding sheet in the CDCM, to include the application of the fixed adder before rounding but after the LDNO discount calculation (Section 213-B/Section 313-B and Section 213-D/Section 313-D).

Update 18 April 2019: This sheet was further restructured in line with the CDCM to separate the application of LDNO discounts from rounding. A new section, Section 213-C/Section 313/C, was added for tariff rounding. In Section 213-E/Section 313-E, a calculation of the revenue from the fixed charge adder in the EDCM was included.

- **‘Revenue’, Update 18 April 2019:** Section 214-D/Section 314-D was modified to remove the revenue recovered by the fixed charge adder from the revenue recovered in the EDCM.

3.5. ADDITIONAL OR MODIFIED OUTPUT SECTIONS

The following revisions were made in the CDCM:

- **‘Output to other models’.** This sheet was updated to include the calculated fixed charge adder (Output 102-C), so that this can be entered into the EDCM. In addition, the calculated CDCM tariffs that were previously exported from this sheet to the EDCM (Output 102-B) were changed. Previously, these were output as the final All the Way tariffs after rounding. After implementing DCP332 and DCP333, these final tariffs have the fixed charge adder applied already. This is not useful for the EDCM, as the EDCM LDNO discounts need to be applied before this fixed adder is included. Instead, these are now output as the pre-rounding, pre discount, pre fixed charge adder tariffs. This means that the LDNO discount can be applied in the EDCM first, before the fixed charge adder is included and then rounding is carried out.

Update 18 April 2019: The following revisions were made in the EDCM:

- **‘Output to other models’.** This sheet was modified to note that, in Output 207-A/Output 307-A, the revenue being output for the CDCM explicitly excludes the fixed charge adder revenue recovered from the EDCM¹. This is because the fixed charge adder is already being calculated in the CDCM and considered as part of the CDCM revenue, even where the revenue associated with the fixed charge adder is ultimately recovered through the EDCM.

3.6. CHANGES REQUIRED IN THE USER GUIDES

If implemented, it will be necessary to reflect these modifications in the model user guides. We would make the following changes:

- **CDCM user guide.** Section 3 Model Structure would be updated to reflect the new sheet. Section 6 Inputs would be updated to reflect the new inputs that have been introduced. Section 7 Calculations would be updated to describe the new calculation of the fixed charge adders. Section 8 Outputs would be updated to describe the new outputs to other models.
- **EDCM user guide.** Section 6 Inputs would be updated to reflect the new inputs that have been introduced. Section 7 Calculations would be updated to describe the application of the fixed charge adders.

¹ We understand that, when setting charges, the third row of this output table is directly entered as an input into the CDCM.

4. IMPACT STATEMENT

4.1. BACKGROUND

Update 18 April 2019: The impact assessment has not changed compared to the previous service request. This is because the change made under the new modelling request only affects outputs when resolving the inter-model circularities.

The impact assessment submitted under this service request sets out the impact of DCP 332 and DCP 333 on:

- **‘CDCM tariffs’.** Tariffs produced by the CDCM;
- **‘CDCM per kWh’.** Net revenue per kWh for each CDCM tariff; and
- **‘CDCM per MPAN’.** Net revenue per MPAN for each CDCM tariff.

In each case, the impact assessment presents values before the DCP, after the DCP, absolute difference, and percentage change.

We have not included impact assessments for EDCM outputs because we do not have access to actual EDCM data. Likewise, we are not able to determine the final impact of DCP 332 and DCP 333 without resolving inter-model circularities, as we do not have the actual EDCM data needed to do that. **All impacts are presented before resolution of inter-model circularities.**

Three scenarios are provided for two different options, as set out in the table below.

Table 4.1: Summary of scenarios studied in impact assessment

Option		DCP 332 Option D and DCP 333 Option C	DCP 332 Option D and DCP 333 Option C
Scenario			
SoLR Cost	Bad Debt Cost		
✗	✗	CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333C_Base.xlsx	CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333D_Base.xlsx
✓	✗	CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333C_SoLR.xlsx	CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333D_SoLR.xlsx
✓	✓	CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333C_SoLR+Debt.xlsx	CEPA-TNEI_A11-I_ImpactAssessment_2020-21_332D-333D_SoLR+Debt.xlsx

Impact assessments were generated using inputs from the 2020/21 published models as requested by the working group.

In addition, the working group provided inputs for:

- Illustrative supplier of last resort and bad debt costs, for each DNO; and
- The numbers of MPANs included in the EDCM for each tariff category, for each DNO, with the total across all tariff categories for Option C and Option D.

Table 4.2 presents inputs provided by the Working Group, which the impact assessments are based on.

Table 4.2: Impact assessment input data

DNO	Illustrative Supplier of Last Resort Costs	Illustrative Bad Debt Costs	Option C Total MPANs from EDCM	Option D Total MPANs from EDCM
ENVWL	£579,475.7	£250,000	792	991
NPgN	£389,445.58	£250,000	2,727.5	2,776.8
NPgY	£558,789.34	£250,000	0	0
SSEH	£187,897.1	£250,000	0	0
SSES	£741,376.1	£250,000	0	0
SPD	£367,770.85	£250,000	3,544	3,608
SPMW	£487,944.83	£250,000	344	354
LPN	£570,219.21	£250,000	1,693.8	1,977.2
SPN	£558,322.14	£250,000	0	0
EPN	£881,860.41	£250,000	3,334.4	3,546.4
EMID	£643,447.6	£250,000	1,334.1	2,303.3
WMID	£603,311.42	£250,000	41,867.8	41,871.4
SWEST	£275,434.41	£250,000	2,007.7	2,043.1
SWALES	£392,141.34	£250,000	267.9	405.6

4.2. IMPACTS

We have calculated the impact on CDCM tariffs (all-the-way and LDNO discounted), as well as on total revenue recovered per MPAN and per kWh from different tariff categories. All of these outputs are provided in the accompanying workbooks, however, we have included the following outputs directly within this document:

- the absolute impact, in p/MPAN/day, on all-the-way fixed charges; and
- the absolute impact, in £/MPAN, on £/MPAN bills for all-the-way customers.

These graphs below show the results across DNOs, but do not specify individual DNOs. These results are available in the accompanying workbooks.

Note that the “base” impact assessments (without the new revenues included) returned no difference in costs for all-the-way tariffs compared to the original model without the DCPs implemented.

These impacts are in line with expectations, in that they increase the fixed charges of the customers to whom the methodology is allocating the revenue associated with Supplier of Last Resort and Bad Debt costs. As expected, when the bad debt costs are not included, then the two variants of the model give identical results (since they both use Option D for DCP 332).

The extent of the fixed charge increase is higher when there is more cost to be allocated (i.e. when there are revenues associated with Bad Debt as well as Supplier of Last Resort costs). The difference between Option D and Option C for DCP 333 is relatively minor, as the additional customer categories that Option C includes the calculation do not constitute a very large number of MPANs, meaning the change in fixed charge adder is not that large.

For all-the-way tariffs, the average change in bill is less than £1 per MPAN in all cases. The largest % change in £/MPAN bills observed across all tariffs (including LDNO) over all options and scenarios is 2.4%.

Impacts on LDNO customers are similar, although somewhat more volatile due to some ± 0.001 changes in unit rates and some ± 0.01 changes in other charges.² These small changes also occurred in the “Base” impact assessment, when the new revenue was not included. This is because of rounding, as the structure of the rounding calculations has been changed. Previously, the LDNO discounted tariffs were calculated by applying the discount percentages to the rounded all-the-way tariffs, but they are now calculated based on the unrounded all-the-way tariff (so that the fixed charge adder can be applied after discounting). This means that, previously, LDNO tariffs were essentially being rounded twice – in the updated model, they are only being rounded once.

For some of the larger LDNO tariff categories, this difference leads to changes in bills on the order of £10s per MPAN per year. This is due to the rounding differences for capacity and unit rate charges which are then applied to large volumes of kWh or large values of capacity (e.g. for HV HH Metered Customers). The % differences are still very small (typically less than 1%).

In addition, the increases in the fixed adders are higher (in % terms) for LDNO LV customers than all-the-way customers and even higher for LDNO HV customers. This is because the new fixed charge adders are not discounted, and LDNO-connected customers are still to pay 100% of their share of Supplier of Last Resort and Bad Debt costs.

² Reductions in LDNO charges occurred in some cases where all-the-way charges in the baseline model were rounded up before the application of the LDNO discount. The opposite occurred in some cases where all-the-way charge was rounded down in the baseline model before the application of the LDNO discount.

4.2.1. DCP 332 Option D and DCP 333 Option C

Supplier of Last Resort costs only

Figure 4.1: Change in fixed charge, All the Way

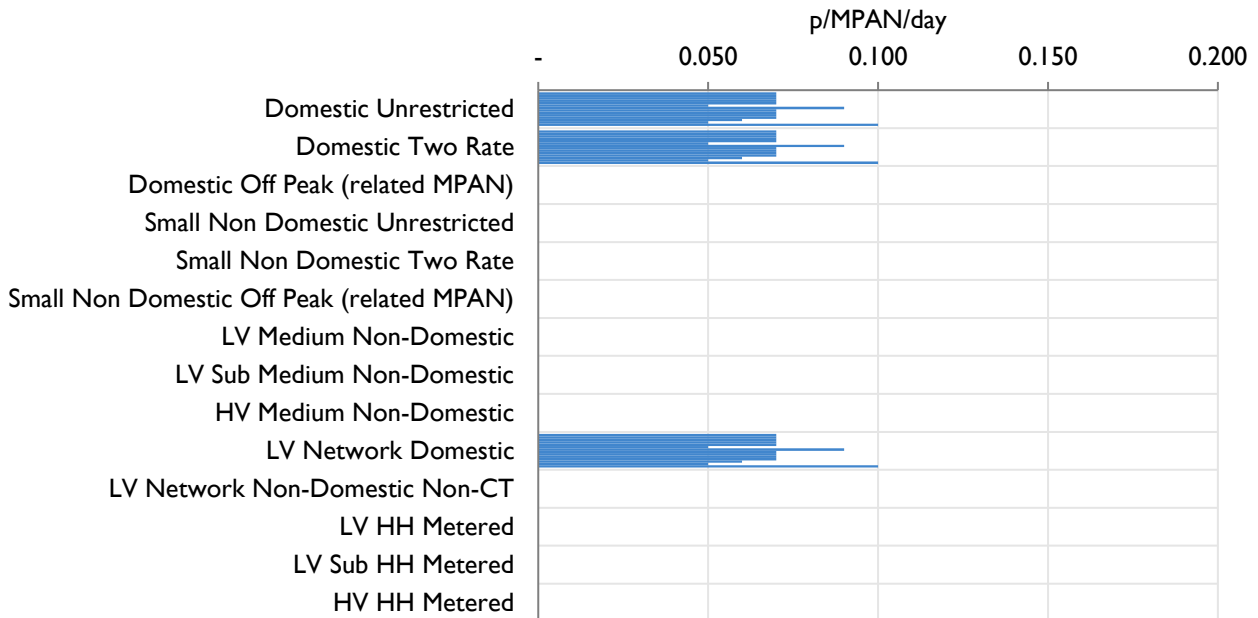
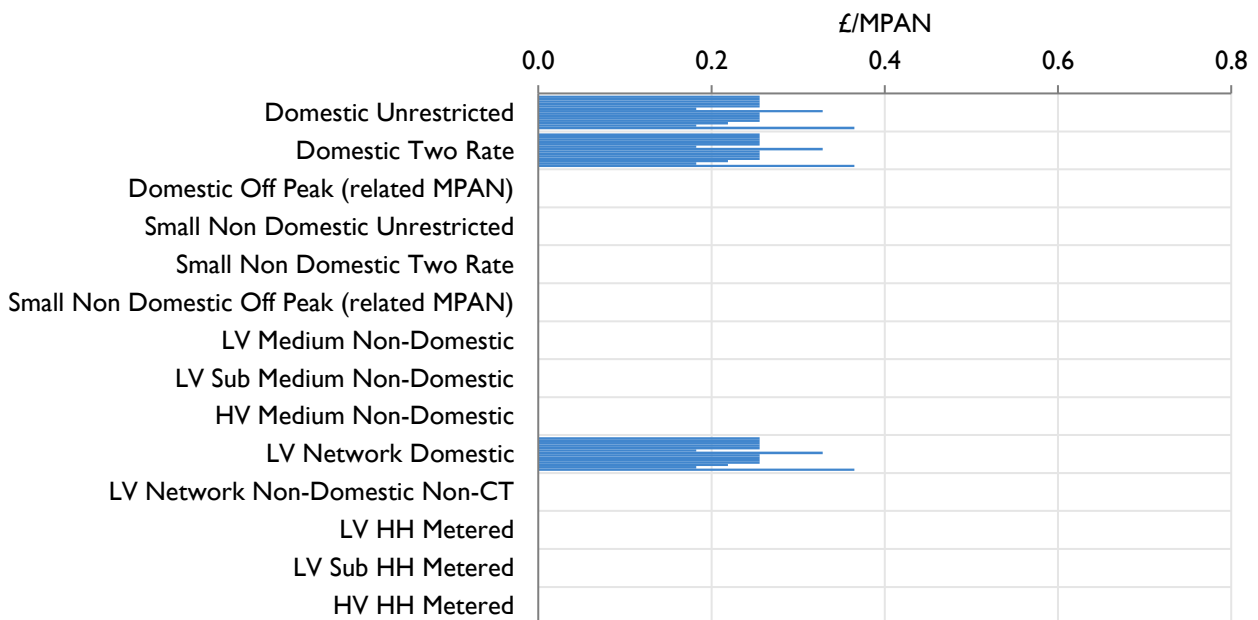


Figure 4.2: Change in average bill, All the Way



Supplier of Last Resort and Bad Debt costs

Figure 4.3: Change in fixed charge, All the Way

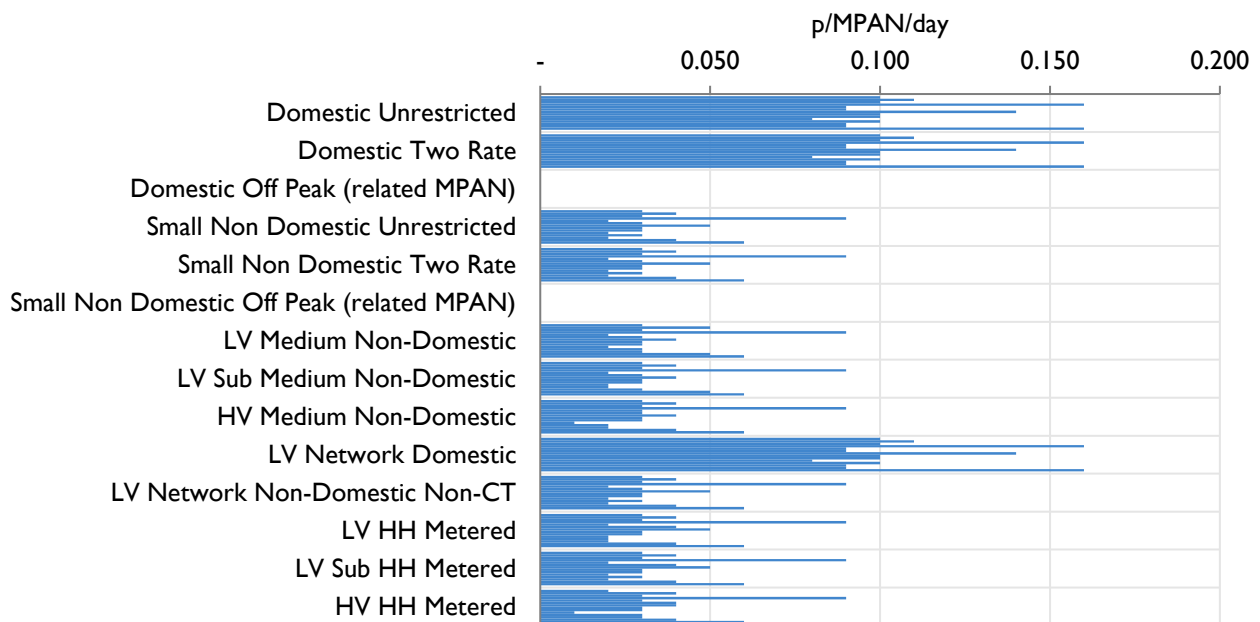
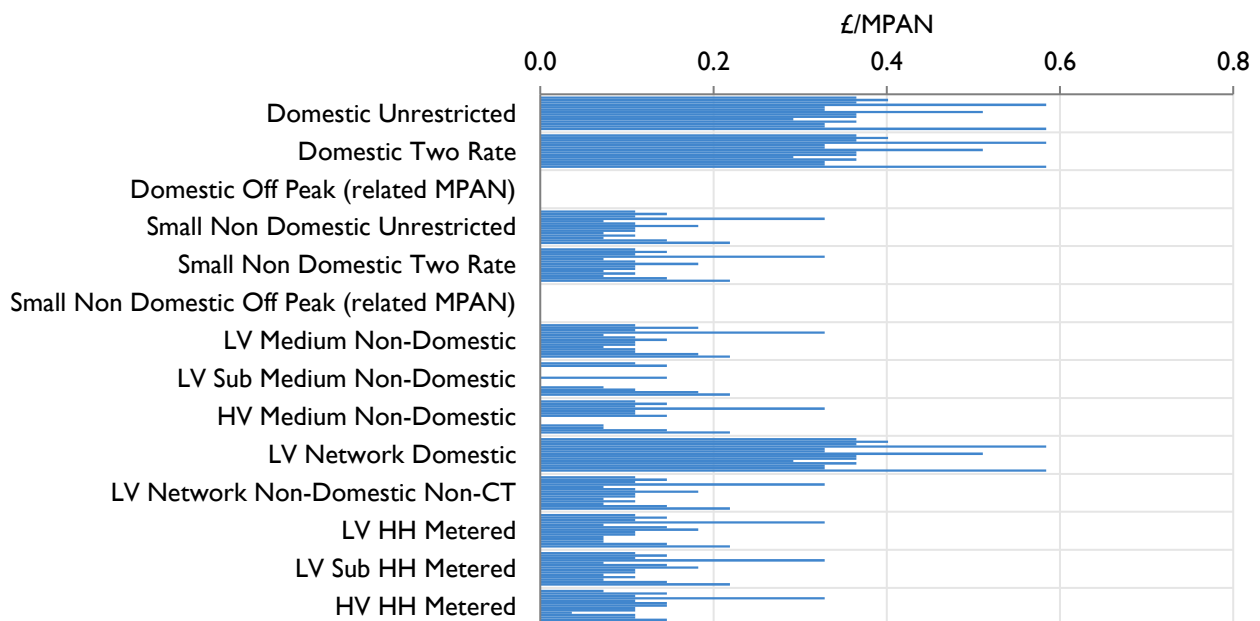


Figure 4.4: Change in average bill, All the Way



4.2.2. DCP 332 Option D and DCP 333 Option D

Supplier of Last Resort costs only

Figure 4.5: Change in fixed charge, All the Way

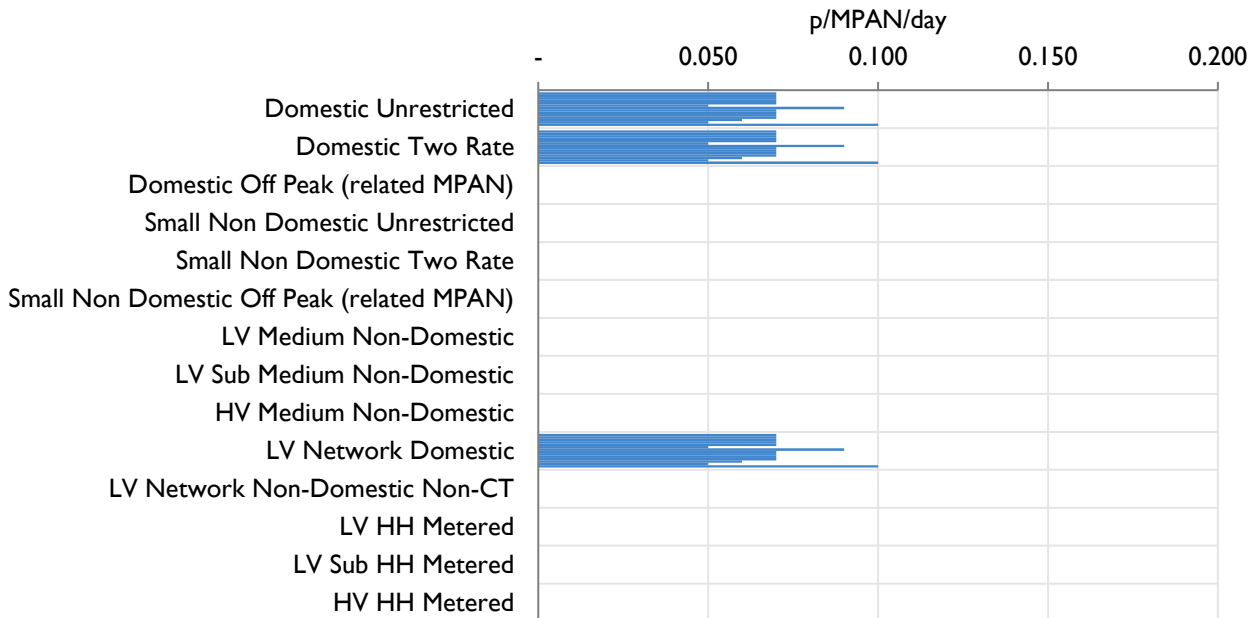
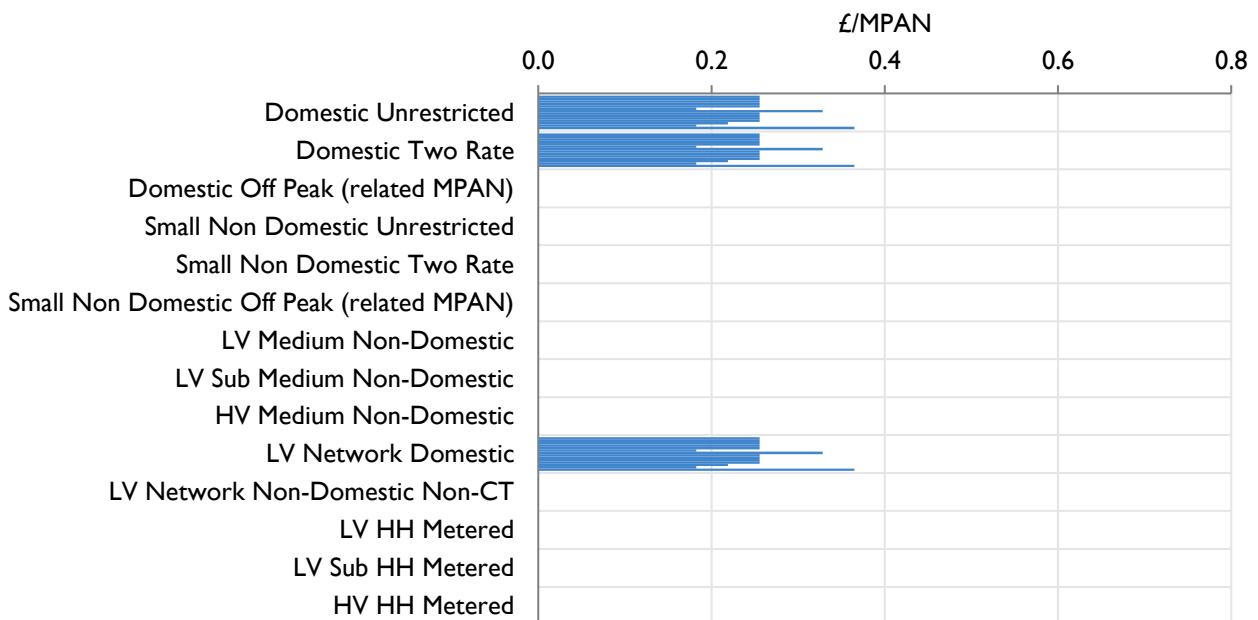


Figure 4.6: Change in average bill, All the Way



Supplier of Last Resort and Bad Debt costs

Figure 4.7: Change in fixed charge, All the Way

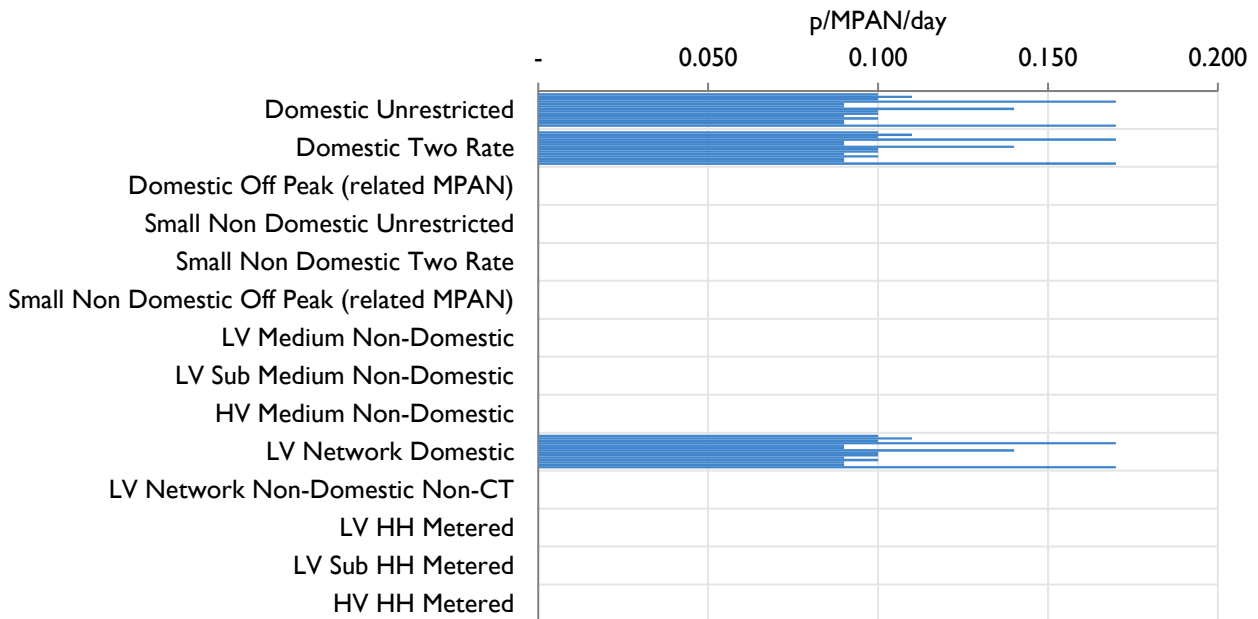
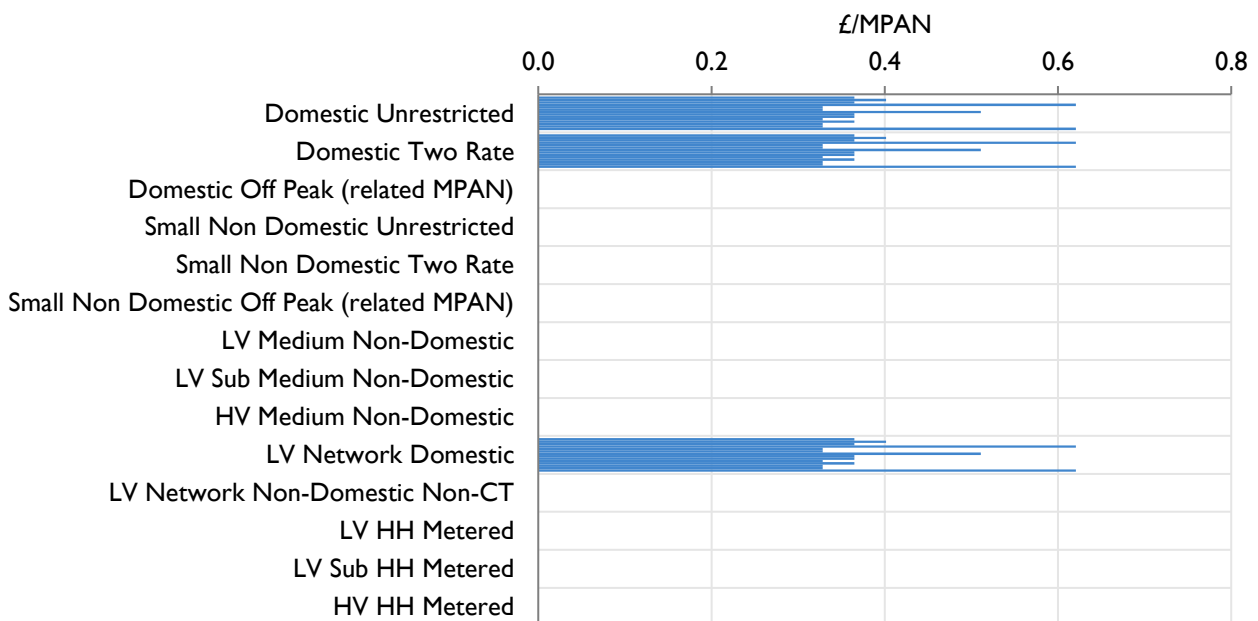


Figure 4.8: Change in average bill, All the Way





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