Model documentation: Update models & guidance for DCP 268 (Request B04-1)

17 July 2019

DCUSA/ElectraLink

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1. 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 reference files for revisions noted here within and the new file names;
- 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, ARP and EDCM (LRIC & FCP) models that implement DCP 268 – *"DUoS charging using half-hourly settlement data"*.

The reference files noted below were developed in line with *"DCP 268 Draft Legal Text v2.0.pdf"* shared with the modelling team on 10th June 2019. This text set out changes required to implement DCP 268, which was approved by Ofgem on 8th April 2019.

2.1. REFERENCE FILES

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

Table 2.1: Reference files

Model	Model file name	Date sent
CDCM	CDCM_v3_20181016.xlsx	16/10/2018
ARP	ARP_v3_20181016.xlsx	16/10/2018
EDCM (LRIC)	EDCM-LRIC_v4_20181102.xlsx	02/11/2018
EDCM (FCP)	EDCM-FCP_v4_20181102.xlsx	02/11/2018

2.2. NEW FILES

The following table records the versions of the charging models and impact assessment provided to the DCP 268 Working Group in response to the request described above.

Table 2.2: New files

Model	Model file name	Date sent
CDCM	CDCM_v4_20190717.xlsx	17/07/2019
ARP	ARP_v4_20190717.xlsm	17/07/2019
EDCM (LRIC)	EDCM-LRIC_v5_20190717.xlsx	17/07/2019
EDCM (FCP)	EDCM-FCP_v5_20190717.xlsx	17/07/2019
CDCM Impact assessment	B04-1_DCP268ImpactAssessment_2020-21_20190717.xlsx	17/07/2019

Model	Model file name	Date sent
Inputs used for impact assessment[1]	DCP268_Inputs_20190701.xlsx	17/07/2019

2.3. ASSUMPTIONS AND CLARIFICATIONS

DCP 268 seeks to facilitate a transition to half-hourly (HH) settlement for non-half hourly (NHH) customers by moving to a time band charging basis, based on the HH (profiled) data used in settlement.

The draft legal text requires that the 33 existing tariffs in the CDCM/ARP (and exported to the EDCM) be replaced by 16 enduring tariffs–each with unit-rate charges 1-3.

The modelling team was provided with the following mapping indicating how DNOs would move customers from existing to enduring tariffs:

Table 2.3: DCP 268 – CDCM tariff mapping table (provided to the modelling team on 10th June 2019)

Tariff name	Enduring Tariff Name
Domestic Unrestricted	Domestic Aggregated
Domestic Two Rate	Domestic Aggregated
Domestic Off Peak (related MPAN)	Domestic Aggregated (Related MPAN)
Small Non Domestic Unrestricted	Non-Domestic Aggregated
Small Non Domestic Two Rate	Non-Domestic Aggregated
Small Non Domestic Off Peak (related MPAN)	Non-Domestic Aggregated (Related MPAN)
LV Medium Non-Domestic	Non-Domestic Aggregated
LV Sub Medium Non-Domestic	Non-Domestic Aggregated
HV Medium Non-Domestic	Non-Domestic Aggregated
LV Network Domestic	Domestic Aggregated
LV Network Non-Domestic Non-CT	Non-Domestic Aggregated
LV HH Metered	LV Site Specific
LV Sub HH Metered	LV Sub Site Specific
HV HH Metered	HV Site Specific
NHH UMS category A	Unmetered Supplies
NHH UMS category B	Unmetered Supplies
NHH UMS category C	Unmetered Supplies
NHH UMS category D	Unmetered Supplies
LV UMS (Pseudo HH Metered)	Unmetered Supplies
LV Generation NHH or Aggregate HH	LV Generation Aggregated
LV Sub Generation NHH	LV Sub Generation Aggregated
LV Generation Intermittent	LV Generation Site Specific
LV Generation Intermittent no RP charge	LV Generation Site Specific no RP Charge

[1] Not a formal deliverable. Shared for information.

Tariff name	Enduring Tariff Name
LV Generation Non-Intermittent	LV Generation Site Specific
LV Generation Non-Intermittent no RP charge	LV Generation Site Specific no RP Charge
LV Sub Generation Intermittent	LV Sub Generation Site Specific
LV Sub Generation Intermittent no RP charge	LV Sub Generation Site Specific no RP Charge
LV Sub Generation Non-Intermittent	LV Sub Generation Site Specific
LV Sub Generation Non-Intermittent no RP charge	LV Sub Generation Site Specific no RP Charge
HV Generation Intermittent	HV Generation Site Specific
HV Generation Intermittent no RP charge	HV Generation Site Specific no RP Charge
HV Generation Non-Intermittent	HV Generation Site Specific
HV Generation Non-Intermittent no RP charge	HV Generation Site Specific no RP Charge
Count = 33	Count = 16

The DCP 268 Working Group[2] confirmed in an email exchange over 14-17th June 2019 that customers on a "Non-Domestic Aggregated" enduring tariff should be treated as LV-connected, despite including customers from the "HV Medium Non-Domestic" and "LV Sub Medium Non-Domestic" tariffs. The Working Group noted that suppliers are currently migrating customers on these tariffs to the appropriate HH tariffs, so the remaining volume of customers in this group is low (less than 600 remained in 2016). It is expected that the majority will have been migrated already by the time that DCP 268 is implemented (2021-22).

The draft legal text introduced a requirement that *"for the purposes of the calculations described in Step 2 below, forecast volumes for the Domestic Aggregated (Related MPAN) and Non-Domestic Aggregated (Related MPAN) tariffs are added to the volumes for Domestic Aggregated and Non-Domestic Aggregated tariffs"* (Schedule 16, paragraph 52A). It also removed the rows from the table of standing charge factors corresponding to the "Domestic Aggregated (Related MPAN)" and "Non-Domestic Aggregated (Related MPAN)" tariffs (Schedule 16, paragraph 74).

The Working Group clarified that the intent of the text was that the "Related MPAN" tariffs should mirror their corresponding "Aggregated" tariffs but not have a fixed charge component. The wording of the draft legal text was based on the previous model solution, in which "Related MPAN" tariffs were introduced at the end of the model rather than appearing in calculations throughout the model, alongside other tariffs. The modelling team proposed to model the solution as per the published models, in which "Related MPAN" tariffs are calculated like other tariffs, but with an aggregation at the 'Pseudo load coefficient" step. The proposed approach would give identical results, but with the advantage of aligning with the draft solution to DCP 341. This approach was supported by the Working Group in email exchanges, and confirmed in a call with ElectraLink on 18th June 2019.

The Working Group advised that there was not sufficient time to make changes to the draft legal text, and recommended that changes should instead be achieved through "house-keeping" modifications after the models had been received.

[2] DNO representatives to the DCP 268 Working Group were contacted by email through the DCUSA Secretariat, though the Group itself had not met since March 2018 (15 months before this service request was received).

The modelling team has therefore made the following assumptions in implementing the draft legal text:

Table 2.4: Assumptions applied to interpret "DCP 268 Draft Legal Text v2.0.pdf"

DCUSA text reference	Assumption	Worksheet reference	Description	Suggested amendment to text
Schedule 16, paragraph 52A	"Related MPAN" tariffs aggregation	Pseudo-load coefficients	The wording of Paragraph 52A requires adding "(Related MPAN)" volumes to the equivalent "Aggregated" volumes. This step is not necessary to achieve the text's intent, and would introduce needless complexity (and was not included in previous model solutions developed for consultation). The intent of Paragraph 52A can be achieved more transparently through aggregation at the Pseudo load coefficient stage – e.g. through an adjustment to Paragraph 70 (c) iv, as per DCP 341. It has therefore been assumed that the aggregation described by Paragraph 52A should be applied while calculating pseudo-load coefficients – giving the effect that "Aggregated" and "(Related MPAN)" tariffs have the same unit rates.	[Remove paragraph 52A & replace with edits to Schedule 16, paragraph 70 (c) iv suggested below.]
Schedule 16, paragraph 70 (c) iv		Pseudo-load coefficients	A. Paragraph 70 (c) iv refers to *"non-half hourly and half hourly unmetered supplies"*, which are already merged under DCP 268. It has therefore been assumed that this phrase should be ignored, pending deletion. B. Paragraph 70 (c) iv can be used to implement the intention of paragraph 52A. It has therefore been assumed that Paragraph 52A should be implemented by aggregating coefficients calculated for each of the: • Domestic Aggregated and Domestic Aggregated (Related MPAN); and • Non-Domestic Aggregated and Non-Domestic Aggregated (Related MPAN) tariffs, to produce one value per network level (as per DCP 341).	"the result of (iii) above is the pseudo load coefficient for the network level and unit rate, save that the coefficients calculated for each of the following tariffs ~~non-half hourly and half hourly unmetered supplies~~ are then aggregated to produce one value per network level: • Domestic Aggregated and Domestic Aggregated (Related MPAN); and • Non-Domestic Aggregated and Non-Domestic Aggregated (Related MPAN)."
Schedule 16, paragraph 74		Fixed inputs	The draft text for DCP 268 has deleted standing charge factors for the "Related MPAN" tariffs in the expectation that factors for the "Aggregated" tariffs could be applied to a tariff group combining customers for both.	[Reintroduce standing charge factors for the "Related MPAN" tariffs, with values of 100% at the LV circuits level as per existing text.]

			It has therefore been assumed that standing charge factors of 100% should be applied at the LV circuit level to "Domestic Aggregated (Related MPAN)" and "Non-Domestic Aggregated (Related MPAN)" tariffs.	
Schedule 20, paragraph 2.1 (g)	Split of units by distribution timeband	ARP_Load characteristics	DCP 268 makes "Split of units by distribution timeband" redundant in the CDCM and ARP, since all enduring tariffs have three unit rates aligning exactly to the red (black), amber (yellow) and green timebands. The previous input tables would now show 100% in every cell, so fall away. The text detailing historic data to be provided by DNO Parties in the ARP includes *"the estimated proportion of units recorded in each relevant time pattern regime that fall within each distribution time band"*. Post DCP-268, this table would likewise be a block of cells reading 100%, so fall away. Paragraph 2.1 (g) should therefore be updated to remove this requirement.	"details of the historic data over the previous 3 years used in calculating the average values for load characteristics (load factor, coincidence factors~~, and the estimated proportion of units recorded in each relevant time pattern regime that fall within each distribution time band~~) and peaking probabilities."

2.4. OUTSTANDING LEGAL TEXT ISSUES

Aside from the assumptions and clarifications listed above, we are not aware of any outstanding issues with the legal text that the working group ought to consider.

3. MODEL REVISIONS

3.1. STRUCTURAL CHANGES

Implementing DCP 268 involved replacing the existing set of 33 tariffs with the enduring set of 16 tariffs. This meant a reduction in the number of columns and, in some instances, rows on the following sheets of the CDCM and ARP:

- 'ARP_Load characteristics'. ARP only;
- 'ARP_Inputs by customer type'. ARP only;
- 'Fixed inputs';
- 'Inputs by customer type';
- 'Standing charge factors';
- 'Load & Loss characteristics';
- 'Customer contributions';
- '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';
- 'Tariff summary';
- 'Outputs to other models'. CDCM only; and
- 'Typical bills'. ARP only.

It also required corresponding changes on the following sheets of the EDCM:

- 'LDNO inputs';
- 'LDNO calculations';
- 'LDNO tariffs'; and
- 'LDNO tariffs transposed'.

3.2. ADDITIONAL OR MODIFIED INFORMATION SECTIONS

The following revisions were made to information sections in the CDCM and ARP:

- '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 names.

- 'Named ranges'. Ranges and hyperlinks updated.
- 'ARP_Load characteristics'. Split of units by distribution timeband removed.

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).

3.3. ADDITIONAL OR MODIFIED INPUT SECTIONS

Beyond adding or removing columns and rows, the following revisions to input sections were made in the CDCM and ARP:

- **'Fixed inputs.**
  - 'Input 101-D: Mappings'. Fixed inputs revised to characterise new tariffs.
  - 'Input 101-E: Standing charge factors'. Fixed inputs revised to characterise new tariffs.
  - 'Input 101-F: Flags'.
    - Fixed inputs revised to characterise new tariffs.
    - Override to use flat annual load removed.
  - 'Input 101-G: Identifiers for customer groupings'.
    - Fixed inputs revised to characterise new tariffs.
    - "Groupings for equalising unit rates" renamed "Groupings for aggregated pseudo-load coefficients" and adjusted to implement paragraph 52A rather than the (deleted) paragraph 72A).
  - 'Check that UMS flags apply only to UMS' removed.
- **'Inputs by customer type'.**
  - 'Input 102-C: Split of units by distribution timeband'. Mapping from units to timebands (Paragraphs 42.c & 45) removed.
  - 'Check for split of units by timeband' removed.
- **'ARP_Inputs by customer type'**
  - 'Input 501-F: Split of units by distribution timeband - Unit rate 1' removed.
  - 'Input 501-G: Split of units by distribution timeband - Unit rate 1' removed.
  - 'Input 501-H Split of units by distribution timeband - Unit rate 1' removed.
  - 'Check for split of units by timeband' removed.

No additional changes to inputs were required in the EDCM beyond revisions to accommodate the additional CDCM tariffs in Input 307-A on the "LDNO inputs" sheet.

3.4. ADDITIONAL OR MODIFIED CALCULATION SECTIONS

Beyond adding or removing columns and rows, the following revisions to calculation sections were made in the CDCM:

- **'Pseudo-load coefficients'.**
  - Aggregation of unmetered supply tariffs (Paragraph 70.c.iv) removed.

        - 'Section 105-C: Aggregated values for UMS customers'. Changed to '...Aggregated values for pseudo-load coefficients'. Aggregation for UMS customers removed. Aggregation for Domestic Aggregated and Domestic Aggregated ('Related MPAN') and Non-Domestic Aggregated and Non-Domestic Aggregated ('Related MPAN') introduced.
        - 'Section 105-F: Aggregated load characteristics for UMS customers'. Removed.
        - 'Section 105-G: Calculation of correction factor'. Adjustment for UMS aggregation removed.
    - Mapping from units to timebands (Paragraphs 42.c & 45) removed. Pre-268, one and two-rate tariffs were mapped to red, amber and green or black, yellow and green timebands. With the introduction of charging on a universal HH basis, this step is no longer needed.
        - 'Section 105-B: Average load by timeband'. Simplified to remove mapping from unit rates to timebands.
        - 'Section 105-J: Ratio of coincidence factor to load factor, based on uniform distribution in timebands and peaking probabilities'. Calculation simplified.
    - Removal of override to use flat annual load. Pre-268, single-rate generation tariffs were assumed to have flat annual load. With the introduction of charging on a universal HH basis, this assumption is no longer needed.
        - 'Section 105-A: Flags and hours in timebands'. Override to use flat annual load (unit rate 1 only) removed.
        - 'Section 105-B: Average load by timeband'. Unit rate 1 split of units by distribution timeband revised to remove override.
    - 'Adjustment for domestic and non-domestic charge equalisation' removed as adjustment for Paragraph 72A no longer required.
        - 'Section 105-L: Peak load based on average pseudo load coefficient'. Removed.
        - 'Section 105-M: Adjustment group flags'. Removed.
        - 'Section 105-N: Average pseudo load coefficient for HH tariff forecast, based on average split of units for NHH tariff forecast'. Removed.
        - 'Section 105-O: Volume weighted average pseudo load coefficient by profile class'. Removed.
        - 'Section 105-P: Relative correction factors'. Removed.
        - 'Section 105-Q: Final correction factors for Paragraph 72A adjustment'. Removed.
    - Outputs to other sheets rationalised.
        - 'Section 105-K: Pseudo load coefficients, by unit rate'. Removed.
        - 'Section 105-S: Pseudo load coefficients, by unit rate'. Formulae revised to replicate Section 105-K.

- **'Initial unit rates'.**
    - 'Paragraph 72A checks'. Removed.

No additional changes to calculations were required in the EDCM.

3.5. ADDITIONAL OR MODIFIED OUTPUT SECTIONS

No additional changes were required to output sections in the CDCM, ARP or EDCM, beyond the adding or removing columns and rows.

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**. Minor changes would be required to reflect that:
  - "split of units by distribution timeband" is no longer a model input;
  - pseudo load coefficients no longer aggregate across tariffs to implement paragraph 72A but do aggregate across tariffs to implement paragraph 52A; and
  - checks for paragraph 72A on the 'Initial unit rates' sheet have been removed.
  - Figure 2.4 would also be updated with the new set of customer categories.
- **EDCM user guide**. No significant changes are expected to be required in the EDCM user guide.

4. IMPACT STATEMENT

4.1. SUMMARY

The impact assessment submitted under this service request sets out the impact of DCP 268 on all outputs of the CDCM for the 2020/21 charging year, and provides summary tables for the following outputs of specific interest:

- Typical bills per MPAN (all the way), % change
- Average bills per kWh (all the way), % change
- LDNO LV margins, % change
- LDNO HV margins, % change

DCP 268 changes the set of tariffs in the CDCM. Therefore, existing tariffs are compared to the tariffs each customer category would be moved to once DCP 268 takes effect – using the mapping presented in Table 2.3. For example, the Impact Assessment compares results for the existing "Domestic Unrestricted" tariff to the enduring "Domestic Aggregated" tariff. Some of the enduring tariffs combine several existing customer categories, so impacts are arranged by existing tariff name.

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

Post-DCP inputs cannot be taken directly from the published CDCM models. Mapping volumes from existing to enduring tariffs is straight-forward, but load characteristics (load factors & coincidence factors by customer category) cannot be mapped in the same way.

The modelling team provided DNOs with a template of 'Inputs by customer type' with pre-mapped volumes, and with load characteristics generated by mapping from the "closest" existing tariff based on an example provided by NPg. DNOs were asked whether they wished to use load characteristics based on this mapping, or to provide recalculated load characteristics. Three DNOs provided recalculated load characteristics (NPg, SP, SSEN) and three opted to use the mapped load characteristics (ENWL, UKPN, WPD).

4.3. VALIDATION

The following checks were used to check the post-DCP 268 models for errors and compatibility with the intent of the DCP:

- Hypothetical inputs were used to check that the following tariffs from the post-DCP 268 CDCM are capable of replicating charges produced in the existing model by tariffs with a similar charge structure:
    - "Site Specific" demand tariffs can replicate "HH Metered" demand tariffs
    - "Domestic Aggregate" can replicate "LV Network Domestic"
    - "Non-Domestic Aggregate" can replicate "LV Network Non-Domestic Non-CT"
    - "Site Specific" generation tariffs can replicate "non-intermittent" generation tariffs
    - "Unmetered Supplies" can replicate "LV UMS (Pseudo HH Metered)"

- Aggregate (Related MPAN) tariffs match unit rates from related Aggregate tariffs, as required to fulfil the intent of paragraph 52A;
- Impact assessment results can be replicated manually (tested on two randomly selected DNO areas); and
- Impact assessment results sense-checked anomalies understood.

4.4. INTERPRETATION

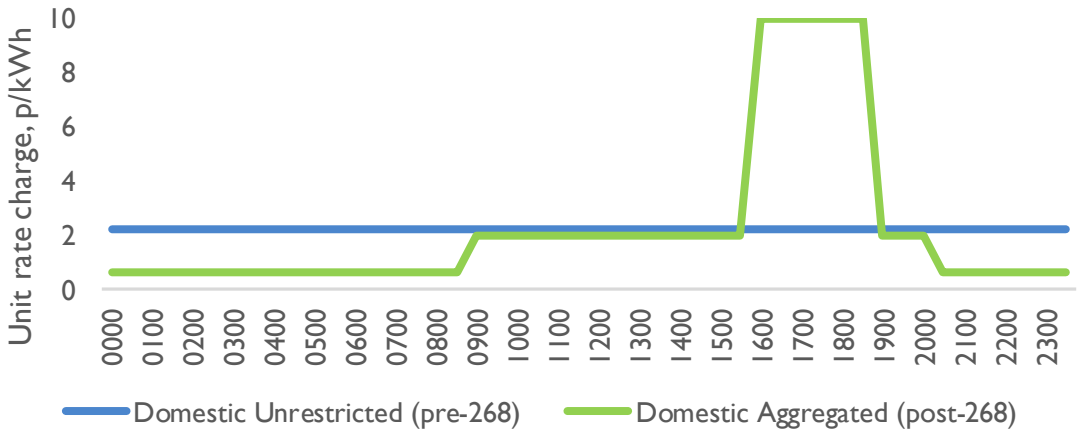
The impact assessment should be interpreted with caution—taking into account the following considerations:

The structure of unit rate charges has changed

Many enduring tariffs have a different number of unit rate charges to the existing tariffs they have been mapped against. For example, the "Domestic Unrestricted" tariff has a single unit rate, whereas the "Domestic Aggregated" tariff has three unit rates. The impact assessment shows a large increase in the value of unit rate 1 charges in these cases, as well as increases in unit rate 2 and 3 charges which were previously zero.

Figure 4.1 demonstrates how this translates into timebands, taking ENWL's Domestic Unrestricted customers as an example.

Figure 4.1: Comparison of unit rate charges by timeband pre & post-268 (ENWL, 2020-21)



The change in the structure of charges means that impacts are easier to assess by comparing average bills rather than individual charge components.

Mapped load characteristics are a rough approximation of actuals

The impact assessment will not show the actual impacts of DCP 268 for the three DNOs which opted to use mapped load characteristics rather than recalculate them. This approach tends to give a reasonably close match when the enduring tariff is a combination of several existing tariffs with similar load characteristics, but not when the enduring tariff combines several very different existing tariffs—as for the enduring "Unmetered supplies" tariff. For example, the suggested mapping gives the "Unmetered supplies" tariff the load characteristics previously used for the existing "NHH UMS category A" tariff. In the case of ENWL, this means that all UMS customers are assuming to have a 100% load factor and a 100% coincidence factor post-DCP 268. Some of the changes shown in the impact assessments therefore result from differences in the load characteristics applied.

Recalculated load characteristics provided by SSEN may also introduce some unanticipated movement. The modelling team would expect the enduring "Site specific" demand tariffs to be an exact match for the existing "HH metered" tariffs, but SSEN's load characteristic do not match those published.

Large percentage changes can be misleading

In some cases, the impact assessment shows very large percentage changes in typical bills per MPAN or kWh, or in LDNO discounts. There are three common causes for these results:

- revenue matching means that the existing tariff is very close to zero (e.g. LPN);
- the existing tariff has no volumes, but the enduring tariff does (e.g. common for "NHH UMS category D"); or
- the existing tariff was assumed to connect at a higher network level to the enduring tariff it has been mapped to (e.g. "LV Sub Medium Non-Domestic" and "HV Medium Non-Domestic").

Changes to load characteristics affect all tariffs via system peak load

Even where load characteristics have been correctly recalculated, they can still introduce a small impact on typical bills as how they are applied to different customer groups implies a change in system peak load calculated on the 'System peak demand' sheet. System peak load is a key parameter used to allocate "other operating costs" between network levels. This explains why, for instance, "Site specific" demand tariffs still show some minor changes even when load characteristics have been recalculated in a consistent way (e.g. for NPg or SPD).

4.5. Impacts

The impacts introduced by DCP 268 can be broken down conceptually into three types of effect:

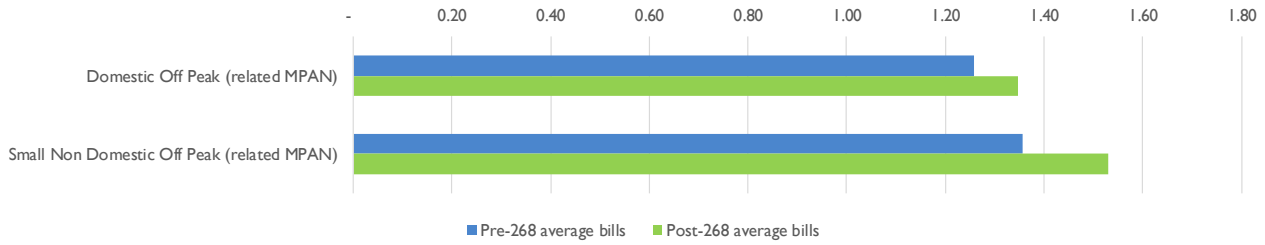
- **effect of calculation changes** from implementing Paragraph 52A;
- **incidence effects** from merging tariffs together—and thus applying common load characteristics to tariffs for which they were previously separate; and
- **knock-on effects**—e.g. via system peak load, revenue matching, or rounding.

The following section illustrates how these effects determine impacts—focusing on average bills per kWh. The direction, size and pattern of impact varies across DNO areas, as shown in the summary tables for typical bills and LDNO discounts provided in section 4.6. The charts in this section show results for NPgN and SPD: two of the DNO areas for which load characteristics were recalculated. Results for some other DNO areas are complicated by changes introduced by using mapped load characteristics.

Effect of calculation changes

The "…Off Peak (Related MPAN)" tariffs are affected by a new adjustment introduced by DCP 268. The intent of paragraph 52A is for the "…Off Peak (Related MPAN)" and equivalent "…Aggregated" tariffs to have the same unit rates. The typical bills of "…Off Peak (Related MPAN)" customers consequently increase in every DNO area. Typical bills for "…Aggregate" demand customers are also affected, but to a lesser degree owing to their greater volumes.

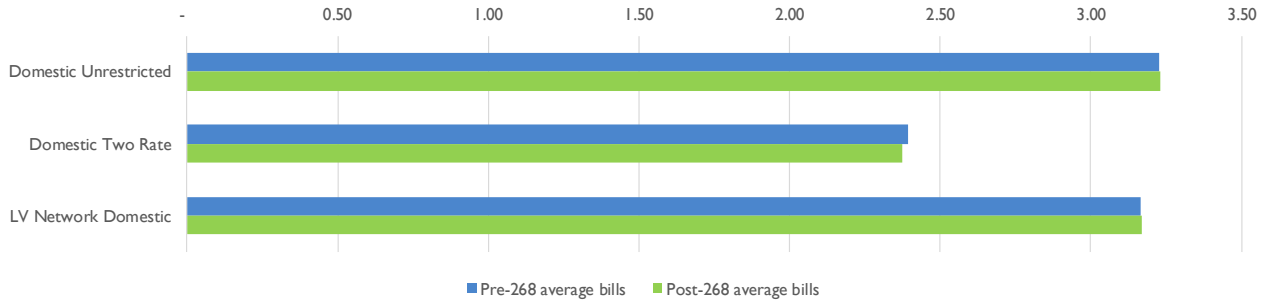
Figure 4.2: Change in average bills (p/kWh) for "...(Related MPAN)" customers, pre & post-268 (NPgN, 2020-21)



Incidence effects

The impact of combining tariffs on typical bills depends primarily on the load characteristics of the tariffs being combined. When tariffs with similar load characteristics are combined, their shared load characteristics are only slightly different to before—so the impact on typical bills is small. For instance, the enduring "Domestic Aggregated" tariff combines three relatively similar tariffs for which the change in typical bills is relatively small. This group of tariffs was also already subject to an adjustment previously implemented under paragraph 72A to equalize weighted average unit rate charges between the three "Domestic" tariffs and the "LV Network Domestic" tariff.

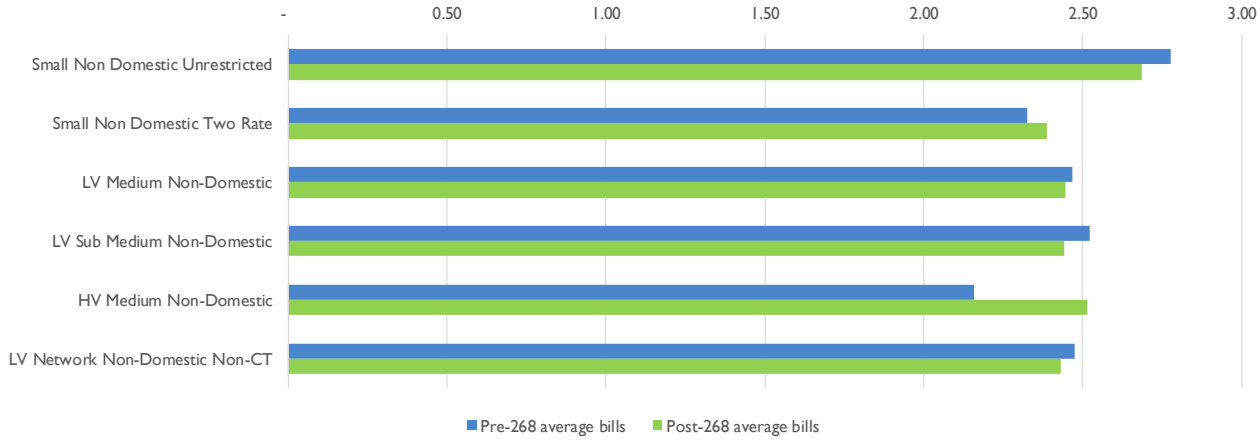
Figure 4.3: Change in average bills (p/kWh) for "Domestic Aggregated" customers, pre & post-268 (NPgN, 2020-21)



By contrast, combining tariffs whose load characteristics are relatively dissimilar means their customers will experience a greater change in typical bills. For instance, the enduring "Non-Domestic Aggregated" tariff combines six customer categories with fairly different load characteristics. It also includes two existing tariffs which were previously assumed to connect at the LV Sub and HV network levels, and are now assumed to connect at the LV level—causing some large changes in typical bills for "HV Medium Non-Domestic" customers in particular.[3] These two tariffs were also not previously included in the "Non-Domestic" tariff group for the purposes of implementing paragraph 72A.

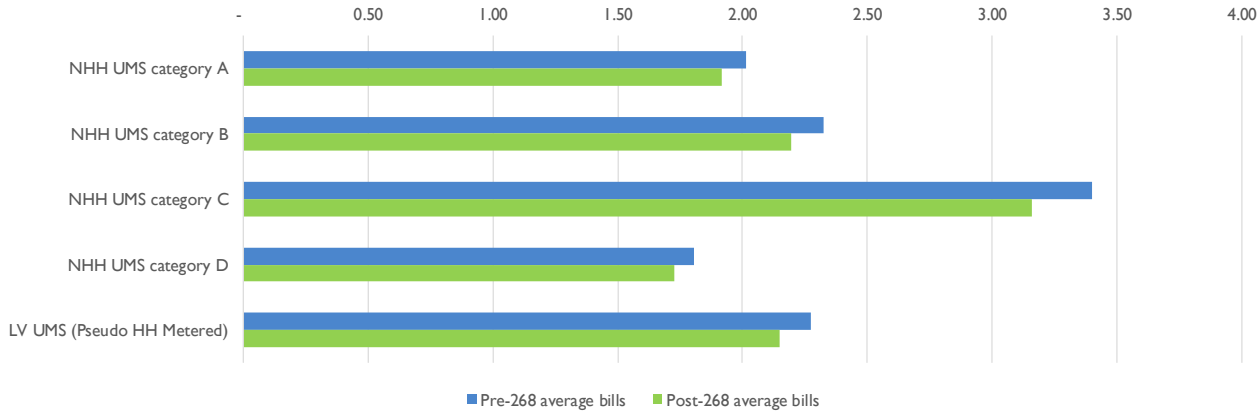
[3] As noted above, suppliers are currently migrating customers on these tariffs to the appropriate HH tariffs. It is expected that the majority will have been migrated already by the time that DCP 268 is implemented.

Figure 4.4: Change in average bills (p/kWh) for "Non-Domestic Aggregated" customers, pre & post-268 (NPgN, 2020-21)



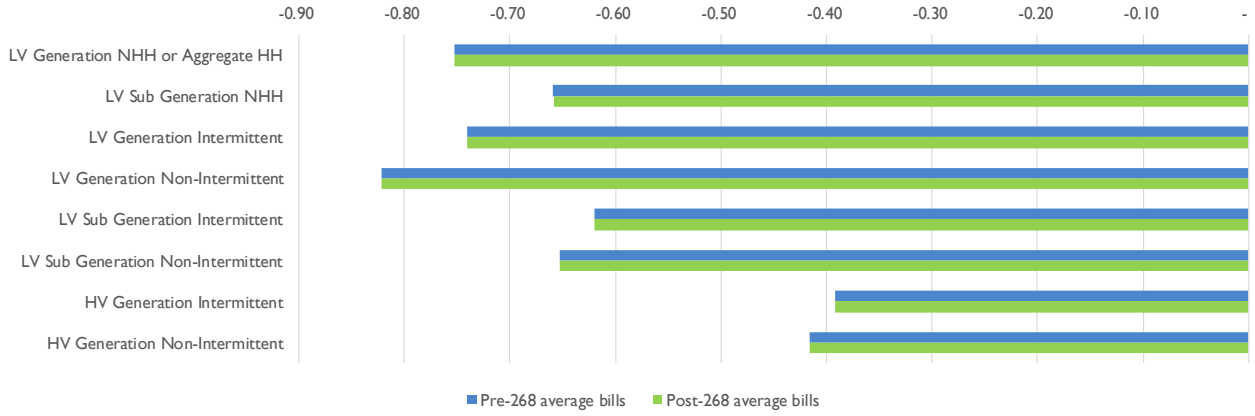
The "Unmetered Supplies" tariff is another example of several relatively dissimilar customer categories being merged. The current approach to calculating load and pseudo load coefficients for these customers applies a single, averaged load and correction factor across all five unmetered supply tariffs. Typical bills therefore all move the same direction (i.e. typical bills do not rise for one UMS tariff while falling for another).

Figure 4.5: Change in average bills (p/kWh) for "Unmetered Supply" customers, pre & post-268 (NPgN, 2020-21)



Generation tariffs show very little change as a result of DCP 268, even when tariffs have been merged. Since generation tariffs do not have any load characteristic inputs, merging them should have no direct impact on their typical bills.

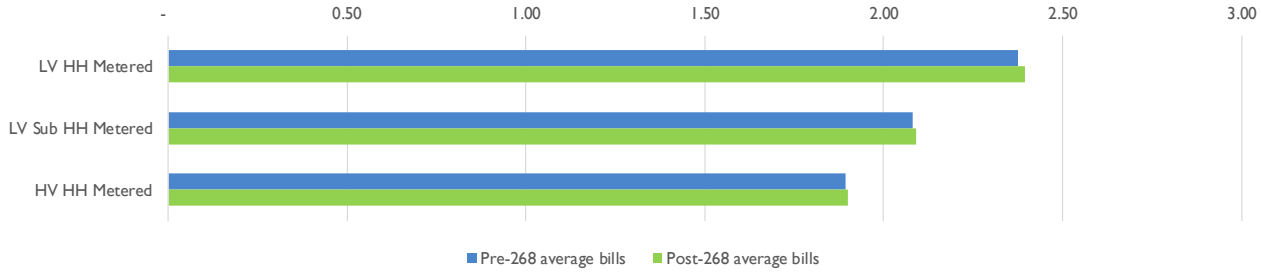
Figure 4.6: Change in average bills (p/kWh) for Generation customers, pre & post-268 (SPD, 2020-21)



Knock-in effects

Tariffs which are not being merged are also slightly affected by DCP 268 through several pathways. For instance, changes in load characteristics associated with merging other tariffs affects the calculation of system peak load, which is an important variable in how costs are allocated between network levels. Other smaller changes are also introduced through revenue matching and rounding steps. Figure 4.7 demonstrates how even "Site Specific" / "HH Metered" demand tariffs can be somewhat affected by DCP 268, even though their volumes and charge structures are unchanged.

Figure 4.7: Change in average bills (p/kWh) for "Site Specific" demand customers, pre & post-268 (NPgN, 2020-21)



4.6. Summary tables

Table 4.1: Impact on typical bills per MPAN (all the way)

Existing tariff	Enduring tariff (post-DCP 268)	ENWL	NPgN	NPgY	SSEH	SSES	SPD	SPMW	LPN	SPN	EPN	EMID	WMID	SWEST	SWALES
Domestic Unrestricted	Domestic Aggregated	1.9%	0.2%	0.0%	-4.6%	-3.5%	0.3%	0.6%	6.3%	3.2%	4.4%	3.3%	1.3%	1.6%	1.1%
Domestic Two Rate	Domestic Aggregated	-7.0%	-0.8%	-2.0%	-3.1%	-8.1%	-0.8%	0.1%	1.0%	-1.0%	-1.6%	-0.3%	-0.9%	1.6%	3.2%
Domestic Off Peak (related MPAN)	Domestic Aggregated (Related MPAN)	11.7%	7.1%	7.1%	11.0%	10.7%	3.0%	7.0%	-	22.6%	30.0%	-	-	-	-
Small Non Domestic Unrestricted	Non-Domestic Aggregated	3.5%	-3.3%	-2.9%	1.6%	20.2%	-1.1%	-2.7%	3.2%	1.7%	0.8%	3.9%	1.7%	-1.2%	-0.5%
Small Non Domestic Two Rate	Non-Domestic Aggregated	5.8%	2.7%	2.4%	6.7%	4.4%	0.0%	4.2%	-17.2%	-9.4%	0.4%	0.4%	4.0%	1.1%	-3.4%
Small Non Domestic Off Peak (related MPAN)	Non-Domestic Aggregated (Related MPAN)	12.6%	12.7%	15.9%	20.8%	44.8%	10.4%	4.9%	*2393.7%*	5.3%	17.0%	-	-	-	-
LV Medium Non-Domestic	Non-Domestic Aggregated	17.4%	-0.8%	-0.3%	6.4%	40.2%	-0.8%	0.9%	-41.1%	-25.1%	-28.0%	-0.2%	6.2%	2.7%	-3.8%
LV Sub Medium Non-Domestic	Non-Domestic Aggregated	21.9%	-3.2%	-	-	-	-	1.0%	-	-	-	47.0%	15.4%	11.3%	2.6%
HV Medium Non-Domestic	Non-Domestic Aggregated	34.3%	16.5%	-1.2%	12.4%	-6.9%	8.1%	10.1%	-	-	-	0.8%	8.0%	-2.2%	-32.3%
LV Network Domestic	Domestic Aggregated	1.4%	0.1%	-0.1%	-3.6%	-3.8%	0.2%	0.6%	-1.9%	2.2%	2.8%	2.0%	0.9%	1.5%	1.2%
LV Network Non-Domestic Non-CT	Non-Domestic Aggregated	4.3%	-1.7%	-1.3%	3.1%	18.3%	-0.5%	-0.7%	-16.1%	-3.8%	0.5%	2.0%	2.5%	-0.2%	-1.3%
LV HH Metered	LV Site Specific	-1.5%	0.8%	0.8%	3.0%	-0.4%	0.0%	-0.3%	-4.4%	-1.3%	-2.6%	-2.1%	-0.6%	-0.8%	-0.1%
LV Sub HH Metered	LV Sub Site Specific	-2.1%	0.4%	0.5%	0.3%	-6.4%	0.1%	-0.4%	-1.7%	-0.3%	-3.1%	-1.9%	-1.7%	-2.2%	-0.2%
HV HH Metered	HV Site Specific	-2.4%	0.4%	0.5%	2.5%	-2.1%	0.0%	-0.4%	-2.2%	-1.1%	-3.8%	-2.0%	-1.6%	-2.3%	-0.3%
NHH UMS category A	Unmetered Supplies	-16.0%	-4.8%	-0.5%	6.4%	-12.3%	-1.5%	-2.4%	-48.8%	-28.6%	-38.9%	-19.9%	-9.8%	-17.0%	-17.1%
NHH UMS category B	Unmetered Supplies	-16.9%	-5.6%	-0.6%	6.6%	-12.7%	-1.8%	-2.6%	-49.3%	-33.3%	-43.5%	-22.6%	-11.2%	-19.0%	-19.8%
NHH UMS category C	Unmetered Supplies	-22.1%	-7.2%	-1.0%	7.7%	-16.5%	-2.5%	-3.3%	-47.6%	-39.7%	-48.2%	-29.5%	-14.8%	-25.3%	-25.8%
NHH UMS category D	Unmetered Supplies	-15.6%	-4.2%	-0.5%	6.4%	-12.4%	-	-	-48.4%	-24.3%	-33.3%	-16.7%	-8.1%	-	-
LV UMS (Pseudo HH Metered)	Unmetered Supplies	-17.5%	-5.5%	-0.6%	6.7%	-13.1%	-1.8%	-2.6%	-49.1%	-33.0%	-43.8%	-23.0%	-11.1%	-19.5%	-20.6%
LV Generation NHH or Aggregate HH	LV Generation Aggregated	-0.8%	0.3%	0.3%	3.4%	-1.2%	0.1%	-0.3%	-0.2%	-0.6%	-1.2%	-	-	-	-
LV Sub Generation NHH	LV Sub Generation Aggregated	-	-	-	-	-1.2%	-0.1%	-0.3%	-	-	-	-	-	-	-
LV Generation Intermittent	LV Generation Site Specific	-0.9%	0.3%	0.3%	3.4%	-1.2%	0.1%	-0.3%	-0.2%	-0.6%	-1.2%	-1.4%	-1.5%	-2.6%	-0.3%
LV Generation Intermittent no RP charge	LV Generation Site Specific no RP Charge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV Generation Non-Intermittent	LV Generation Site Specific	-0.8%	0.3%	0.3%	3.4%	-4.8%	0.0%	-0.3%	9.6%	-0.6%	-17.6%	-1.4%	-1.5%	-2.5%	-0.3%
LV Generation Non-Intermittent no RP charge	LV Generation Site Specific no RP Charge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV Sub Generation Intermittent	LV Sub Generation Site Specific	-0.8%	0.2%	0.5%	3.4%	-	-0.1%	-0.3%	-0.2%	-0.5%	-1.2%	-1.3%	-1.4%	-2.4%	-0.4%
LV Sub Generation Intermittent no RP charge	LV Sub Generation Site Specific no RP Charge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV Sub Generation Non-Intermittent	LV Sub Generation Site Specific	-0.8%	0.2%	0.5%	-	-	0.0%	-0.3%	-	-	-1.2%	-1.3%	-1.4%	-2.4%	-0.4%
LV Sub Generation Non-Intermittent no RP charge	LV Sub Generation Site Specific no RP Charge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HV Generation Intermittent	HV Generation Site Specific	-0.9%	0.2%	0.5%	4.2%	-1.1%	0.0%	-0.3%	-0.3%	-0.6%	-1.3%	-1.3%	-1.3%	-2.3%	-0.4%
HV Generation Intermittent no RP charge	HV Generation Site Specific no RP Charge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HV Generation Non-Intermittent	HV Generation Site Specific	-0.9%	0.3%	2.6%	4.1%	-1.2%	0.0%	-0.3%	-1.2%	-0.7%	-1.2%	-1.3%	-1.4%	-2.4%	-0.3%
HV Generation Non-Intermittent no RP charge	HV Generation Site Specific no RP Charge	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes: Green and red shading indicates percentage increases and decreases respectively. The cell bordered in yellow is excluded from this system as an anonmally. This value arises due to a modest increase over a very small starting value. The starting value is close to zero due to the negative adder applied to unit rates for LPN.

Table 4.2: Impact on LDNO LV margins (percentage point change)

	ENWL	NPgN	NPgY	SSEH	SSES	SPD	SPMW	LPN	SPN	EPN	EMID	WMID	SWEST	SWALES
Domestic Unrestricted	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%
Domestic Two Rate	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%
Domestic Off Peak (related MPAN)	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	26.6%	0.0%	0.2%	-	-	-	-
Small Non Domestic Unrestricted	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%
Small Non Domestic Two Rate	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%
Small Non Domestic Off Peak (related MPAN)	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-3.3%	0.0%	-0.1%	-	-	-	-
LV Medium Non-Domestic	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 Medium Non-Domestic	35.6%	40.5%	39.9%	29.4%	34.8%	39.0%	37.9%	26.7%	31.4%	31.2%	30.4%	33.7%	38.1%	32.7%
HV Medium Non-Domestic	35.6%	40.5%	39.9%	29.4%	34.8%	39.0%	37.9%	26.7%	31.4%	31.2%	30.4%	33.7%	38.1%	32.7%
LV Network Domestic	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 Network Non-Domestic Non-CT	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 HH Metered	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
LV Sub HH Metered	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HV HH Metered	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NHH UMS category A	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%
NHH UMS category B	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%
NHH UMS category C	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%
NHH UMS category D	0.0%	0.0%	0.0%	0.0%	0.0%	39.0%	37.9%	0.0%	0.0%	0.0%	0.0%	0.0%	38.1%	32.7%
LV UMS (Pseudo HH Metered)	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 Generation NHH or Aggregate HH	-	-	0.0%	-	0.0%	-	0.0%	0.0%	-	-	-	-	-	-
LV Sub Generation NHH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV Generation Intermittent	0.0%	0.0%	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	0.0%	-
LV Generation Non-Intermittent	0.0%	0.0%	-	0.0%	-	0.0%	0.0%	0.0%	0.0%	-	0.0%	-	0.0%	-
LV Sub Generation Intermittent	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV Sub Generation Non-Intermittent	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HV Generation Intermittent	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HV Generation Non-Intermittent	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes: Green and red shading indicates percentage increases and decreases respectively. LV Sub Medium and HV Medium Non-Domestic discounts increase because they are now assumed to connect at the LV network level. Other large increases arise where the original LDNO margin was blank due to zero volumes, but becomes positive after volumes are merged with other tariffs.

Table 4.3: Impact on LDNO HV margins (percentage point change)

	ENWL	NPgN	NPgY	SSEH	SSES	SPD	SPMW	LPN	SPN	EPN	EMID	WMID	SWEST	SWALES
Domestic Unrestricted	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%
Domestic Two Rate	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%
Domestic Off Peak (related MPAN)	-0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	44.9%	-0.1%	0.1%	-	-	-	-
Small Non Domestic Unrestricted	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%
Small Non Domestic Two Rate	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%
Small Non Domestic Off Peak (related MPAN)	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	4.9%	0.0%	0.0%	-	-	-	-
LV Medium Non-Domestic	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 Medium Non-Domestic	56.4%	62.7%	61.3%	58.2%	56.6%	63.5%	58.5%	44.9%	50.8%	48.4%	47.1%	50.4%	60.8%	61.9%
HV Medium Non-Domestic	56.4%	62.7%	61.3%	58.2%	56.6%	63.5%	58.5%	44.9%	50.8%	48.4%	47.1%	50.4%	60.8%	61.9%
LV Network Domestic	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 Network Non-Domestic Non-CT	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 HH Metered	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
LV Sub HH Metered	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%	0.0%	0.0%
HV HH Metered	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
NHH UMS category A	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%
NHH UMS category B	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%
NHH UMS category C	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%
NHH UMS category D	0.0%	0.0%	0.0%	0.0%	0.0%	63.5%	58.5%	0.0%	0.0%	0.0%	0.0%	0.0%	60.8%	61.9%
LV UMS (Pseudo HH Metered)	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 Generation NHH or Aggregate HH	-	-	0.0%	-	0.0%	-	0.0%	0.0%	-	-	-	-	-	-
LV Sub Generation NHH	-	-	-	-	0.0%	-	-	-	-	-	-	-	-	-
LV Generation Intermittent	0.0%	0.0%	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	0.0%	-
LV Generation Non-Intermittent	0.0%	0.0%	-	0.0%	-	0.0%	0.0%	0.0%	0.0%	-	0.0%	-	0.0%	-
LV Sub Generation Intermittent	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 Non-Intermittent	0.0%	0.0%	0.0%	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
HV Generation Intermittent	0.1%	0.1%	0.8%	6.1%	2.3%	0.5%	0.6%	0.1%	0.2%	0.0%	0.8%	1.8%	0.7%	0.8%
HV Generation Non-Intermittent	0.0%	-0.1%	-1.3%	-3.8%	-1.5%	-0.9%	-0.3%	0.0%	0.0%	0.0%	-0.4%	-0.7%	-1.0%	-0.8%

Notes: Green and red shading indicates percentage increases and decreases respectively. LV Sub Medium and HV Medium Non-Domestic discounts increase because they are now assumed to connect at the LV network level. Other large increases arise where the original LDNO margin was blank due to zero volumes, but becomes positive after volumes are merged with other tariffs. LDNO margins also change for HV Generation tariffs, which are the only generation tariffs with a fixed charge.

CEPA

Queens House
55-56 Lincoln's Inn Fields
London WC2A 3LJ
United Kingdom

CEPA Ltd
@CepaLtd