



Commentary on Impact Assessments for DCP 266 (Request A10-3)

15 February 2019

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1. INTRODUCTION

This document provides a commentary to accompany impact assessments commissioned by the DCP 266 Working Group on 29th January 2019.

The modelling team was asked to create two sets of impact assessment for DCP 266 – for 2018/19 and 2019/20 charging years. The Working Group requested that both assessments include resolution of circularities between the CDCM and PCDM models (but not the EDCM).

2. SPECIFICATION

Table 2.1 sets out the model versions used to assess the impact of DCP 266. These are the same versions used for the impact assessment submitted to the Working Group on 12th December 2018.

Table 2.1: Reference files

Model	Model file name	User guide file name	Date sent
PCDM	PCDM_v3_20181016.xlsx	PCDM_v3_20181016.pdf	16/10/2018
CDCM	CDCM_v3_20181016.xlsx	CDCM_v3_20181016.pdf	16/10/2018
PCDM	PCDM_v3(266)_20181207.xlsx	PCDM_v3(266)_20181207.pdf	07/12/2018
CDCM	CDCM_v3(266)_20181207.xlsx	CDCM_v3(266)_20181207.pdf	07/12/2018

3. IMPACT STATEMENT

3.1. BACKGROUND

The impact assessments submitted under this service request set out the impact of DCP 266 on:

- 'Discounts %'**. % LDNO discounts produced by the PCDM;
- 'Discounts per kWh'**. LDNO discounts per kWh of all-the-way load;
- 'Discounts £'**. Aggregate £ value of LDNO discounts at CDCM boundary levels;
- 'CDCM tariffs'**. Tariffs produced by the CDCM;
- 'CDCM net rev'**. Net revenue for each CDCM tariff;
- 'CDCM per kWh'**. Net revenue per kWh for each CDCM tariff;
- 'CDCM per MPAN'**. Net revenue per MPAN for each CDCM tariff; and
- 'CDCM other outputs'**. Other CDCM outputs not shown elsewhere (e.g. notional EHV asset values, system simultaneous maximum load, assets in CDCM model, and breakdown of total net revenue).

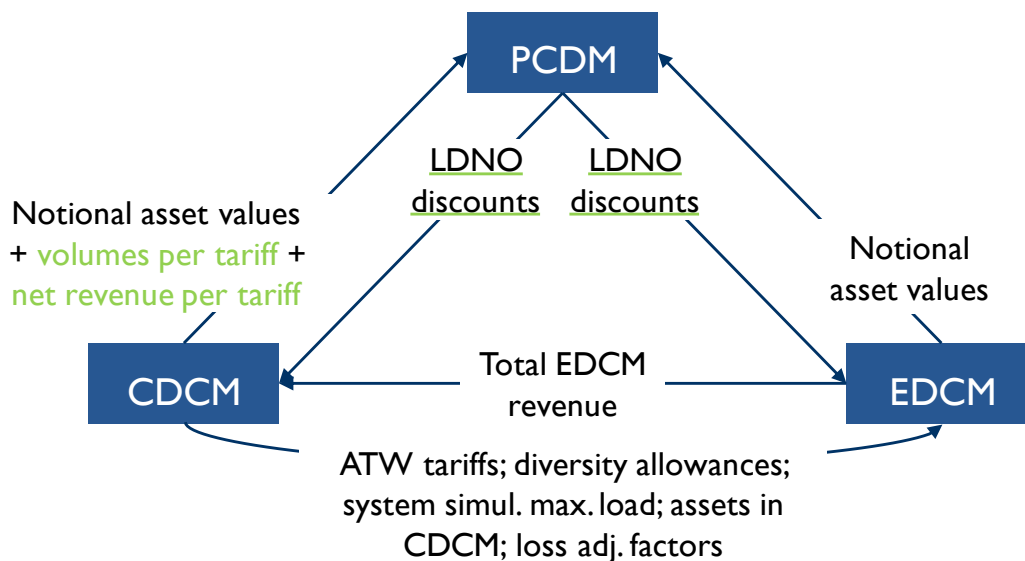
In each case the impact assessment presents values before DCP 266, after DCP 266, absolute difference, and percentage change.

Impact assessments were generated using inputs from the 2018/19 and 2019/20 published models, except where the Working Group had provided new or alternative inputs for network losses, units distributed and non-zero volumes.¹

The model versions used for impact assessments include changes implemented under DCP306. For the purposes of the impact assessments presented here, “non-activity costs and reconciling amounts” were fully allocated to “Other costs” as opposed to allocating part of that amount to “Ofgem licence fees”. This assumption removes the impact of DCP 306, as per the published models for those years.

DCP 266 introduces a new output table to be passed from the CDCM to the PCDM. Figure 3.1 illustrates the interactions between the three charging models, with changes brought about by DCP 266 highlighted in green.

Figure 3.1: Changes to model interactions arising from DCP 266



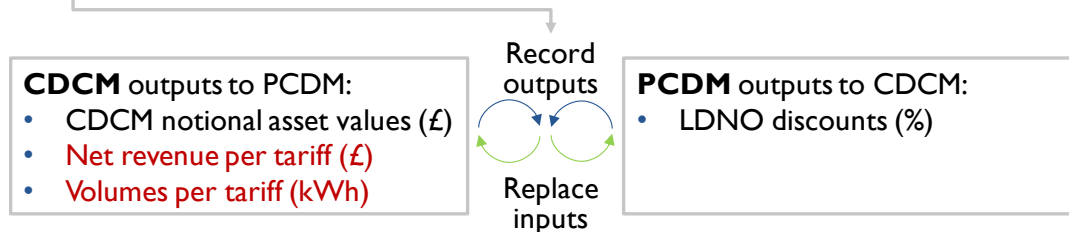
3.2. APPROACH

Figure 3.2 summarises the approach taken to producing impact assessments, which was run for each DNO both pre and post-DCP 266, using both 2018/19 and 2019/20 data. The items in red only apply to the post-DCP 266 models.

¹ Attachment A_DCP 266 Input Data 2018_19 and 2019_20.xlsx; Attachment B_DCP 266 2018_19 Non Zero Adjusted Volumes.xlsx; Attachment C_DCP 266 2019_20 Non-Zero Adjusted Volumes.xlsx – received from Working Group on 29/01/2019.

Figure 3.2: Approach to impact assessments for DCP 266 (items in red only apply for post-266 models)

- Step 1: Populate with published inputs
- Step 2: Replace CDCM volumes with non-zero values
- Step 3: Add new PCDM inputs required by DCP 266 (network losses & units distributed)
- Step 4: Allocate all “non-activity costs and reconciling amounts” to “other costs”
- Step 5: Resolve CDCM/PCDM interaction



The Working Group requested impact assessments where the circularity between the CDCM and PCDM is resolved. Resolution is defined as when “CDCM table 102-A and PCDM table 402-C, CDCM table 102-F and PCDM table 402-R, and PCDM table 401-A and CDCM table 102-E remain aligned”. The values in these tables can differ slightly even after many iterations, without having any impact on tariffs. Since precise interpretation of “aligned” was not defined, the modelling team have chosen to provide impact assessments after 7 iterations – by which point all LDNO discounts are resolved to at least 9 significant figures.

In practice, extra iterations made very little difference relative to the impact assessment submitted on 12/12/2018 using 2018/19 data because that version effectively included one iteration already. That is, revenue and volumes per tariff were passed from the CDCM to the PCDM and LDNO discounts were passed back into the CDCM.

The Working Group requested that impact assessments should not attempt to resolve interactions with the EDCM model, which were considered “to be immaterial in comparison with the CDCM circularity”.

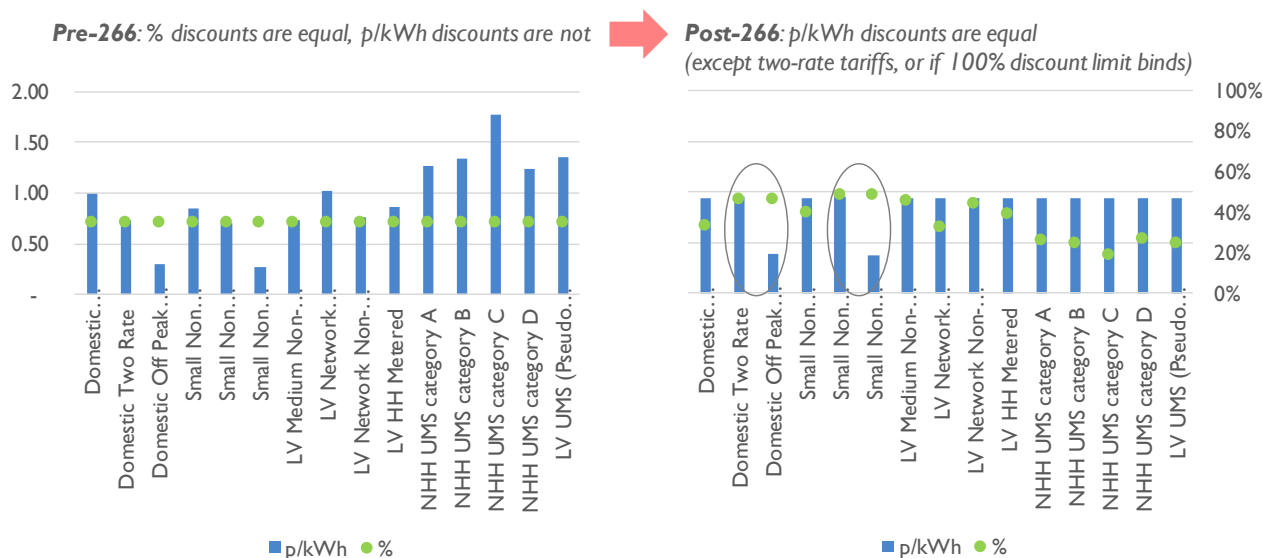
3.3. IMPACTS

Overall effect

The overall effect of DCP 266 is to cause discounts to diverge in percentage terms, but to converge to the same p/kWh value for the same boundary level.

Figure 3.3 illustrates the basic effect for one DNO (ENWL) for one boundary level (LV). Whereas before DCP 266, percentage discounts were consistent across tariffs – leading to inconsistent discounts per kWh, after DCP 266 each tariff receives a different % discount – leading to a consistent discount per kWh.

Figure 3.3: LDNO discounts for LV boundaries, ENWL 2019/20 – p/kWh (left axis), % (right axis)



This outcome is not achieved in two instances:

- for “two rate” and “off peak (related MPAN)” tariffs, which must have equal % discounts; and
- for tariffs where the 100% discount limit binds.

Discounts will also diverge per kWh for tariffs which cover different network levels. For instance, demand users connected at the HV level will receive a lower LDNO discount than those connected at the LV level, other things being equal.

Direction of impacts

The impact of DCP 266 on LDNO discounts differs by tariff, by DNO-LDNO boundary level, and by DNO area. For most tariffs, in most DNO areas, and at most boundary levels, DCP 266 would raise percentage discounts. But for some high-volume tariffs, notably ‘Domestic Unrestricted’, DCP 266 would lower discounts in most cases.

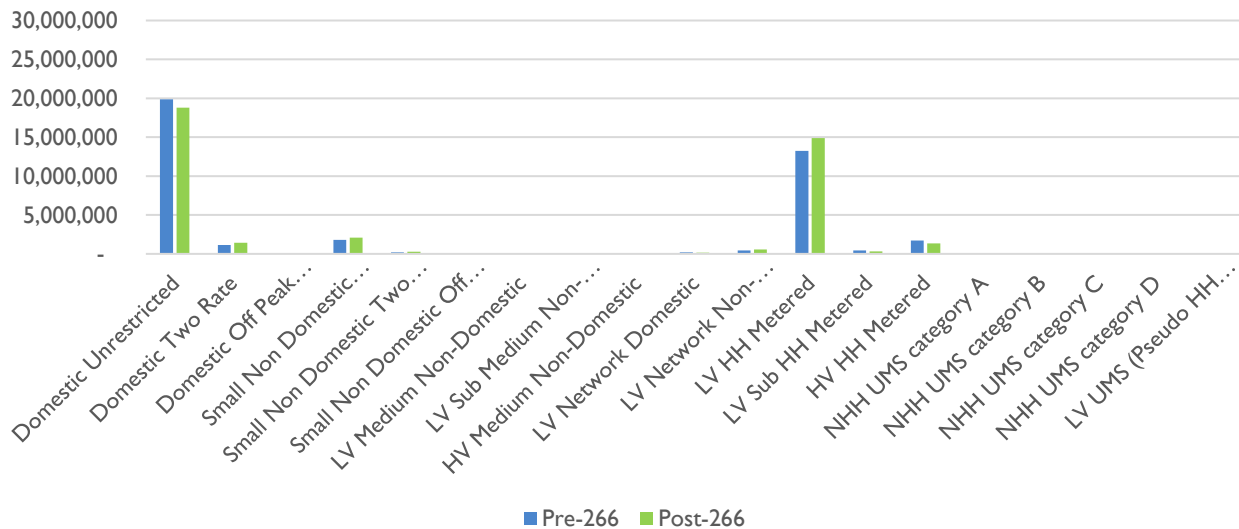
Taking all DNO areas together, these impact assessments suggest that DCP 266 would raise the aggregate value of LDNO discounts for CDCM boundary levels² by £897,568 (+2.29%) in 2018/19, and £800,125 (+1.55%) in 2019/20. The impact for individual LDNOs will differ according to the profile of their customer bases.

Figure 3.4 presents the value of LDNO discounts for CDCM boundary levels³ across GB DNOs in the 2018/19 charging year.

² i.e. Not including discounts applied within the EDCM model, for which input data was not available to the modelling team.

³ Discounts are not shown at EDCM boundary levels (HVplus, EHV, 132kV/EHV, 132kV, 0000) as these would require EDCM volume data, which are not in the public domain. The pattern of impacts will differ at higher boundary levels. For instance, generation tariffs only receive LDNO discounts from the HVplus boundary level upwards.

Figure 3.4: Impact of DCP 266 on aggregate LDNO margins at CDCM boundaries, all DNOs (£) – 2018/19



This picture changes for individual DNO areas. For some DNOs, DCP 266 may reduce the overall value of LDNO discounts or have an impact on specific tariffs in the opposite direction.

Figure 3.5 presents the same chart for the 2019/20 charging year. The pattern of results is similar, though the value of discounts is higher due to increases in LDNO volumes and DNO allowed revenues.

Figure 3.5: Impact of DCP 266 on aggregate LDNO margins at CDCM boundaries, all DNOs (£) – 2019/20

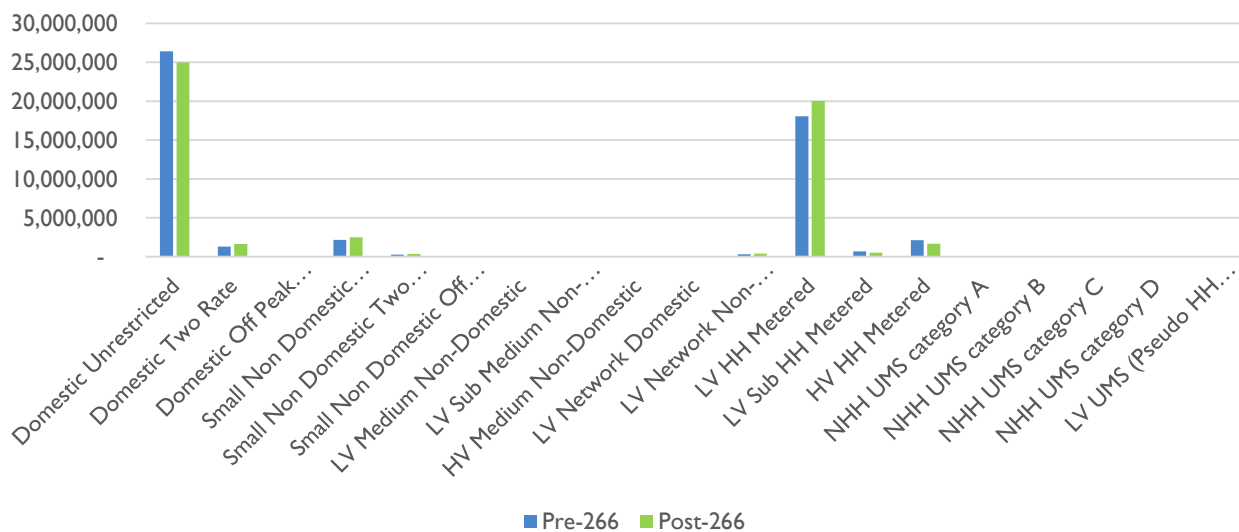


Figure 3.6 and Figure 3.7 present the range of impacts across all discounts produced by the PDCM as 'box and whisker' plots.

Figure 3.6 shows an increase in median and mean discounts for every DNO in 2018/19. Mean increases are modest in some cases (e.g. SSEH, 6.9 percentage points) and large in others (e.g. WMID, 15.4 percentage points). Some individual discounts fall by up to 54 percentage points, and others increase by up to 81 percentage points.

Figure 3.6: Impact of DCP 266 on LDNO discounts (percentage point change) – 2018/19

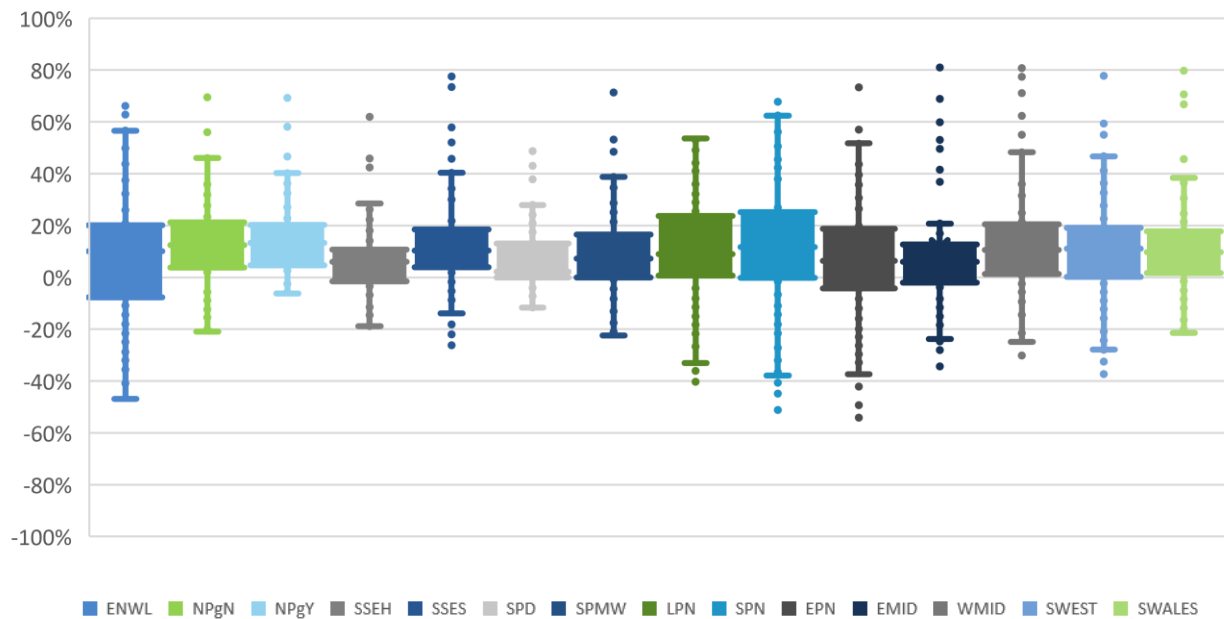
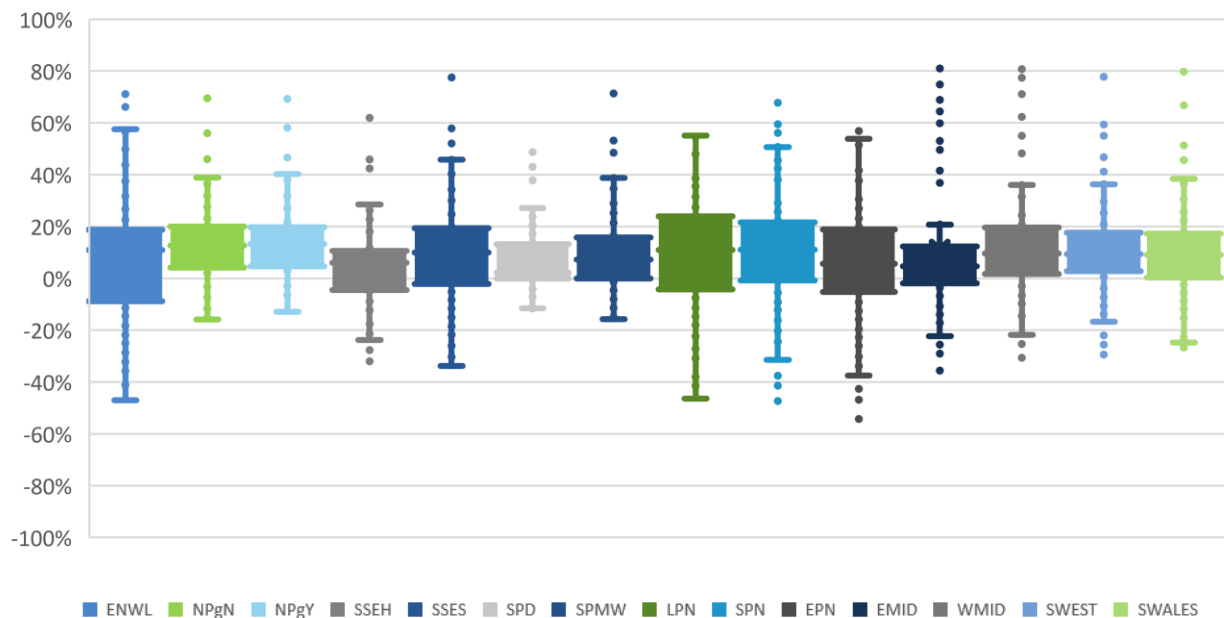


Figure 3.7 shows very similar impacts for 2019/20. There are small differences in every case, though overall the two charts look almost identical. The largest difference between the two impact assessments appears to be for the two DNO areas owned by Scottish and Southern Electricity Networks – SSEH and SSES. This difference relates to SSEH's and SSES's unmetered supply customers, whose average p/kWh charges rose by about a third between 2018/19 and 2019/20 – causing percentage discounts to fall but leaving the value of discounts in p/kWh unchanged.

Figure 3.7: Impact of DCP 266 on LDNO discounts (percentage point change) – 2019/20



Impact of extra iterations

The modelling team submitted a previous impact assessment on 12th December 2018 using 2018/19 data. The previous assessment did not include steps to resolve the circularity between the PCDM and CDCM but is equivalent to the current 2018/19 assessment in all other ways.

The difference between the two 2018/19 assessments is very small. The extra loops change discounts by 0.013% on average in absolute terms (max: 0.096%; min: -0.201%). This is partly because the previous assessment effectively included one round of interactions already. That is, net revenue per kWh was exported from the CDCM to PCDM – as required by DCP 266, and LDNO discounts were sent back from the PCDM to the CDCM. After this first loop, the impact of additional loops diminishes.

3.4. INTERPRETATION

The impact analysis performed as part of this modelling request demonstrates that:

- i. DCP 266 introduces more consistent discounts *per kWh*. An implication of this is that it also introduces more variation in *percentage* discounts. Additional percentage variation corresponds to differences in average tariffs between customer categories, which is the denominator in the percentage discount formula.
- ii. Although the impact of DCP 266 on LDNO discounts can be large, the knock-on effect on all-the-way tariffs is generally small. The range of impacts on net revenue per all-the-way tariff falls between +0.3% and -0.1% (2018/19 data).
- iii. The 100% upper limit on LDNO tariffs is binding for many tariffs at the higher boundary levels.
- iv. DCP 266 exposes LDNOs to new risks from year-to-year changes in average all-the-way tariffs.

Understanding the impact of DCP 266 on a certain discount can be complex. As a simplification, it can help to focus on the following three terms:

- i. All discounts for a DNO are affected by the **revenue / unit scaler** used to bring 2007/08 volumes and revenues into line with the charging year. For example, SPN has a larger scaler than EPN or LPN so, other things being equal, DCP 266 will increase LDNO discounts for SPN more than for EPN or LPN.
- ii. The **average p/kWh tariff** for a customer category, which is the denominator of the percentage discount post-DCP 266. Since this is the only term which varies by customer category within the same charging model, the direction of impact is consistent across LDNO boundary levels within the CDCM and EDCM. For example, if DCP 266 lowers the discount received by LDNOs with a boundary at the 0000 level serving a Domestic Unrestricted end-user, then it will also lower discounts at the 132kV, 132kV/EHV, and EHV levels for that customer category (but not necessarily for HV or LV boundary levels, which fall under the CDCM).
- iii. **Revenue to share per unit for all network levels**, which was the denominator of the discount percentage formula before DCP 266. The PCDM calculates one value per charging model per DNO, which can explain some of the pattern of impacts between charging models. For instance, the average increase in LDNO discounts is greater in the EDCM than the CDCM (12.4% and 5.8% respectively, using 2018/19 data).



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