Ofgem consultation on targeted charging review: minded to decision and draft impact assessment

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Consultation response from the

Centre for Competition Policy

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This consultation response has been drafted by the named academic members of the Centre, who retain responsibility for its content.

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CCP Response to Ofgem Consultation on Targeted Charging Review

The authors welcome the opportunity to respond to Ofgem consultation on the best way of setting the transmission and distribution residual charges. We agree with Ofgem's basic approach to fairness, which reflects our own assessment of fairness in distribution charges in a more general context, prepared for BEUC.[1] We also agree that a major principle behind recovering costs which are 'legacy' rather than forward looking costs, as in the Ofgem consultation, should be to distort consumption and investment decisions as little as possible. Our report majors on domestic customers, most of whom are more likely to alter their demand than to decide to leave the network altogether as a result of price changes. Therefore we agree that the principle of least distortion, as well as the other criteria outlined by Ofgem (in particular practicality and proportionality) indicate that a per customer charge is an appropriate basis for 'residual charges'. We do not comment specifically on Embedded Benefits, but agree that similar principles should apply.

The focus of this response is to take a closer look at the distributional impacts of Ofgem's preferred option of a fixed charge to recover residual costs, as compared to alternative charging options, on domestic customers with different energy usage patterns. Therefore this response is directly related to questions 4, 8 and 10 (a,b). The implications for bills of notional households with some specific consumption characteristics are illustrated in our report for a variety of charging methodologies. Although the report covers the wider issue of allocating both forward looking and residual costs through distribution charges, and additional principles such as efficient signals for future costs are relevant, in this response to Ofgem, we consider residual costs only.

Following the example used by Ofgem when illustrating residual bills of domestic customers in a typical DNO area,[2] we assume that the average residual to be recovered from a domestic customer is £64 per year.[3] Ofgem's preferred option, a fixed charge, allocates preciously a bill of £64 to each domestic customers (except Economy 7), regardless of their consumption characteristics, and we agree that this method meets the principle of reducing harmful distortions as outlined by Ofgem. Our question of interest is how other charging options would allocate the same residual costs across households and the associated implications from a distributional perspective. This may complement Ofgem's discussion on vulnerable consumers, especially if certain correlations exist between households' energy use characteristics and their socio-economic characteristics such as income.

With a similar modelling approach, our simulation model consists eight 'notional' households that differ from each other in one or more ways regarding annual

[1] Lu L & Waddams Price C (2018) "Designing Distribution Network Tariffs that are Fair for Different Consumer Groups: Report for BEUC". Available at http://competitionpolicy.ac.uk/documents/8158338/28406552/CCP+report+for+BEUC.pdf/8aeb45ae-3e8b-9b81-0441-65a940406ba3.

[2] Ofgem (2018) Targeted charging review: Minded to decision and draft impact assessment, Figure 11, p.4.

[3] This assumption can be easily modified, for example, with data from a different DNO area.

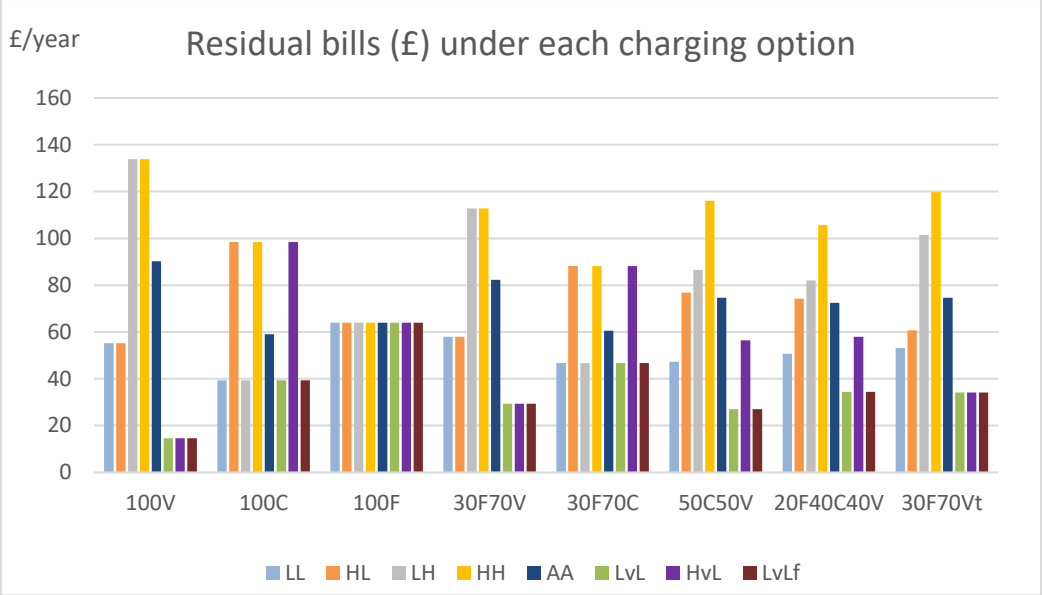
contractual capacity (low, average, high), annual (net) consumption (very low, low, average, high), peak time consumption and whether there is any solar system installed.[4] For this response, we have adapted our wider analysis to assign values to consumption levels using figures from Ofgem's analysis.[5] For illustrative purposes, to emphasise the distributional consequences of different charging methodologies, this is based on a static analysis which assumes that demand is constant across the tariffs. It is worth noting that we do not assume a single connection capacity for all households or assume capacity levels and volumetric consumption levels are always positively correlated. Instead, the notional households in our model present different combinations of capacity and consumption levels.

Regarding the charging options, in addition to 'pure' volume-based, capacity-based and fixed charges, we consider hybrid options containing more than one charging components, similar to Ofgem's "Mostly…partially…" charges.[6] These charging options reflect the variety of tariff structures that are currently used in different European countries and the US to recover distribution network costs. For example, in charging distribution network tariffs to domestic customers, Romania currently uses a purely volumetric approach (like that currently applied to residual charges in the UK); while the Netherlands imposes a combination of capacity and fixed charges, with no volumetric element.[7]

Given an average residual bill per customer per year of £64, we simulate the residual bills under other options for the eight notional households. While the selection of households means that each of them represents 12.5% of the population in our model, it should be noted that we do not imply equal weighting of these households, or the bills generated, in the wider population.

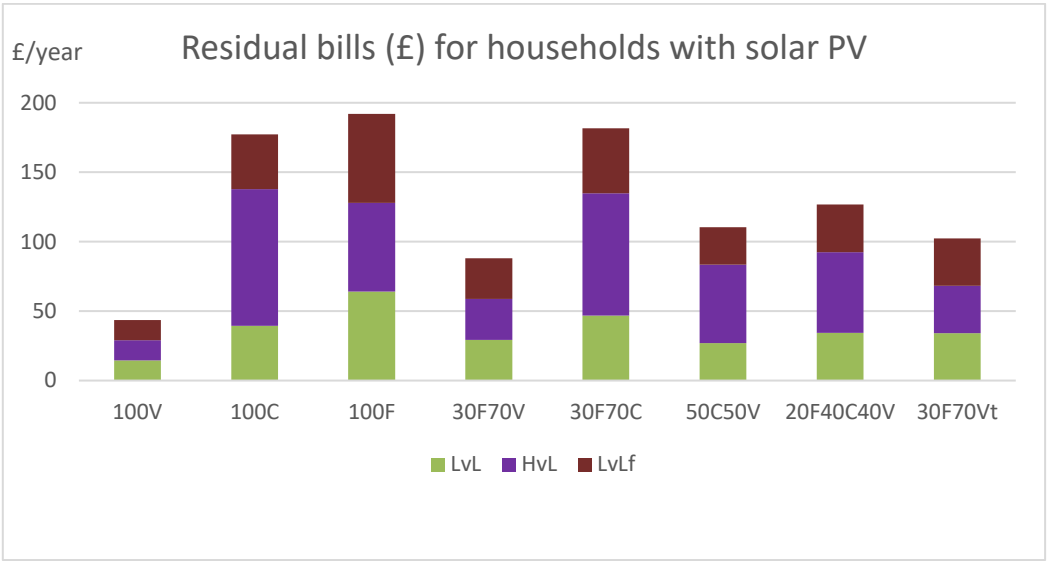
Figure 1 presents an overview of how different charging options distribute the same total residual costs to different households, based on an average bill of £64. More specifically, each bar represents a household's bill for recovering residual costs, and each set of bars depicts bills for different households under a single charging option. As we can see, 100F, Ofgem's preferred option, achieves equality in residual bills among domestic customers, by definition; all the other options distribute residual costs according to some measure of system use. We agree with Ofgem that while some may regard charges linked to the use of system as fairer and more justifiable, residual costs are also more easily avoided under these charges, though we have excluded any direct demand response to different tariffs from our analysis. We note the lower bills under usage based charging for the three households in our model with very low net consumption who have installed solar PV.

[4] For a detailed summary of household profiles, see Table 1 in Appendices.
[5] Frontier Economics (2018) Distributional and wider system impacts of reform to residual charges, Figure 7, p.14.
[6] For a detailed summary of charging options, see Table 2 in Appendices.
[7] For a summary of key features of distribution network tariffs charged to household in different locations, see Table 3 in Appendices. Also see Section 3.2 in Lu L & Waddams Price C (2018) "Designing Distribution Network Tariffs that are Fair for Different Consumer Groups: Report for BEUC" for detailed case studies. Available at http://competitionpolicy.ac.uk/documents/8158338/28406552/CCP+report+for+BEUC.pdf/8aeb45ae-3e8b-9b81-0441-65a940406ba3.



LL – low capacity, low consumption; **HL** – high capacity, low consumption; **LH** – low capacity, high consumption; **HH** – high capacity, high consumption; **AA** – average capacity, average consumption; **LvL** – low capacity, very low consumption; **HvL** – high capacity, very low consumption; **LvLf** – low capacity, very low consumption, able to feed into the grid if allowed

Figure 1. Residual bills (£) under each charging option



LvL – low capacity, very low consumption; **HvL** – high capacity, very low consumption; **LvLf** – low capacity, very low consumption, able to feed into the grid if allowed

Figure 2. Residual bills (£) for households with solar PV

To take a closer look at these three households with very low volumetric consumption because of their solar PV, we present their residual bills under different charging options in Figure 2. These three households receive the lowest bills under volume-based charging option (100V), which may lead to substantial distributional concerns, as the costs they have 'avoided' are shifted to other consumers who do not benefit from the technology. In this context, we agree that a fixed charge is a desirable option in reducing distortion, as it reduces options for avoiding residual. We also note that capacity-based charges (100C) perform well in reducing distortion, in accordance with Ofgem's second leading option. However, as noted above, the capacity levels

featured in our model are not typically correlated with consumption levels. Where capacity bands correlate closely with volume levels, capacity-based charges might perform less well, since they offer more opportunity for avoidance.

Figure 3 shows an alternative way of presenting simulated bills, which is by household. Each set of bars illustrates the residual bills that a household receives under different charging options. This allows the observations of bill implications of different charging options, given customers' specific energy usage characteristics.

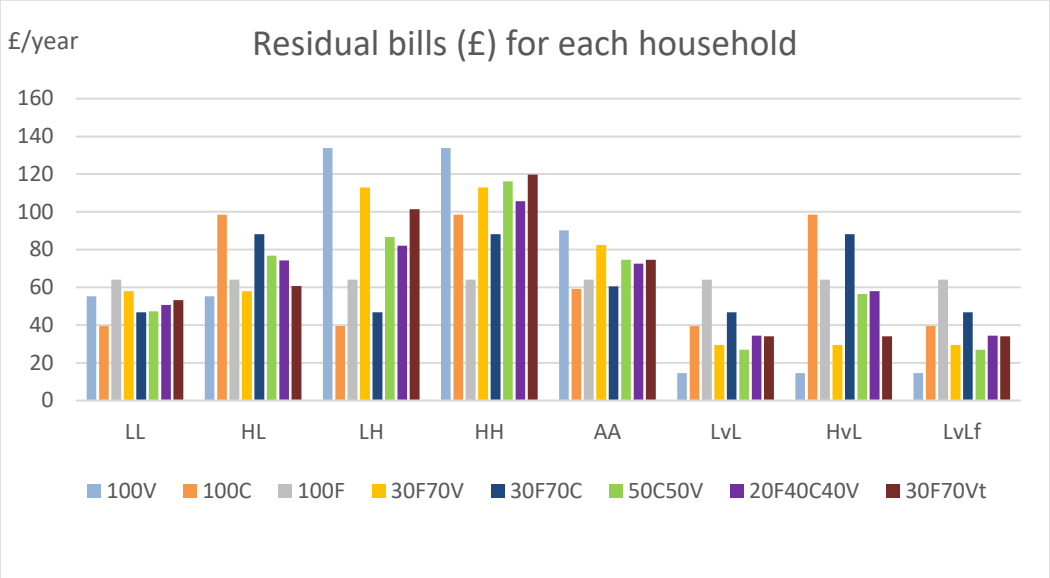


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Figure 3. Residual bills (£) for each household

Our results are largely consistent with Ofgem's estimates. A fixed compared to a volumetric tariff is likely to increase the residual bill for customers who have the lowest levels of system demand and electricity consumption, while customers with average levels of demand and consumption are likely to benefit from a reduced bill. It is not clear whether this may cause distributional concerns due to vulnerability. While electricity consumption and income are positively correlated, there is considerable variation within each income level, as Ofgem notes. Nevertheless, we note that some hybrid options could also reduce distortion considerably if compared to a baseline of volume-based charging, and they may offer less drastic changes in bills (increase or decrease) than charging options containing a single charging component.

If distributional implication is the main concern, one alternative way to recover residual costs is to use increasing block tariffs, in which most costs may be recovered from high volume users, who are more likely to be those most able to bear them. However such a pricing system has practical difficulties,[8] and is not likely to meet the criterion of Ofgem's review.

[8] The practical challenges of increasing block tariffs regarding their designs and consumer responses are discussed in depth, albeit in the context of residential water consumption, in Lu L, Deller D, and Hviid M (2018) "Price and Behavioural Signals to Encourage Household Water Conservation: Implications for the UK", *Water*

Appendices

Household abbreviation	Contractual capacity (kW/year)	Volumetric[9] consumption (kWh/year)	Ratio of consumption (kWh) at peak time	Solar PV	Amount fed into grid (kWh/year)
LL	Low (4)	Low (1900)	1/2	NO	-
HL	High (10)	Low (1900)	2/3	NO	-
LH	Low (4)	High (4600)	1/2	NO	-
HH	High (10)	High (4600)	2/3	NO	-
AA	Average (6)	Average (3100)	1/2	NO	-
LvL	Low (4)	Very low (500)	1	YES	0
HvL	High (10)	Very low (500)	1	YES	0
LvLf	Low (4)	Very low (500)	1	YES	500
			Total consumption (kWh/year)		19000
			Total contractual capacity (kW/year)		52
			Average revenue per household (€/year)		200
			Total revenue (€/year)		1600

LL – low capacity, low consumption; **HL** – high capacity, low consumption; **LH** – low capacity, high consumption; **HH** – high capacity, high consumption; **AA** – average capacity, average consumption; **LvL** – low capacity, very low consumption; **HvL** – high capacity, very low consumption; **LvLf** – low capacity, very low consumption, able to feed into the grid if allowed

Table 1. Notional households[10]

Tariff scenario	Fixed component (£/year)	Capacity component (£/kW)	Volume component (£/kWh)	ToU
100V	-	-	100%	NO
100C	-	100%	-	NO
100F	100%	-	-	NO
30F70V	30%	-	70%	NO
30F70C	30%	70%	-	NO
50C50V	-	50%	50%	NO
20F40C40V	20%	40%	40%	NO
30F70Vt	30%	-	70%	YES

Table 2. Stylised charging options[11]

Resources Management. Available at https://link.springer.com/content/pdf/10.1007%2Fs11269-018-2133-z.pdf.

[9] Figures in red are used in Ofgem's analysis, see footnote 5.

[10] Adapted from Table 6 in Lu L & Waddams Price C (2018) "Designing Distribution Network Tariffs that are Fair for Different Consumer Groups: Report for BEUC". Available at http://competitionpolicy.ac.uk/documents/8158338/28406552/CCP+report+for+BEUC.pdf/8aeb45ae-3e8b-9b81-0441-65a940406ba3.

[11] Adapted from Table 7 in Lu L & Waddams Price C (2018) "Designing Distribution Network Tariffs that are Fair for Different Consumer Groups: Report for BEUC". Available at

Case	Tariff component			Tariff charging basis		Net metering	Main responsibility in setting tariffs
	Fixed	Capacity	Volume (weight)	Non-linear	Time-of-Use		
Italy	YES	YES	YES (66%)	YES	NO	YES	NRA
Portugal	NO	YES	YES (62%)	NO	YES	NO	NRA
Romania	NO	NO	YES (100%)	NO	NO	NO	NRA
The Netherlands	YES	YES	NO (0%)	NO	NO	YES	NRA and DSOs
Norway	YES	NO	YES (70%)	NO	NO	NO	DSOs
California (PG&E)	YES	NO	YES (n/a)	YES	YES	YES	DSO(PG&E)

Table 3. Key features of household distribution network tariffs in selected cases

http://competitionpolicy.ac.uk/documents/8158338/28406552/CCP+report+for+BEUC.pdf/8aeb45ae-3e8b-9b81-0441-65a940406ba3.