IDEAL ECONOMICS

Reforming energy standing charges for prepayment customers

by

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Contents

Abbreviations used in this paper:

BEIS (DECC): Department for Business, Energy and Industrial Strategy (previously the Department of Energy and Climate Change)

CMA: Competition and Markets Authority

EPG: Energy Price Guarantee

PPM: Prepayment meter

PPMIP: Prepayment meter infrastructure provider

SME: Small and medium-sized enterprise

SoLR: Supplier of last resort

SVT: Standard variable tariff (a.k.a. default tariff)

VAT: Value added tax

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Summary

The fixed ('standing') charges in energy bills have risen sharply under Ofgem's price cap. Those households with prepayment meters (PPMs) pay most: £350 p.a. (incl. VAT) for gas and electricity combined, which is £50 p.a. more than those who pay by direct debit.

Low-income households generally consume less energy than high-income households, so the standing charge forms a larger proportion of what they pay and means that overall they pay the highest price per unit of energy. Most PPM customers are on low incomes so the higher standing charges they face further reduce the amount of energy they can afford to buy, with many self-disconnecting from the network.

The government has announced that from July 2023 to March 2024 it will compensate PPM customers for the additional cost (i.e. the higher standing charges) they face relative to those who pay by direct debit. However, PPM customers still have to pay this extra for the three months until July; standing charges will remain very high for all consumers; and it is unclear what will happen from April next year.

This intervention by the government, which will cost the taxpayer £200m., is a direct response to Ofgem's questionable current approach to setting the price cap. It has been Ofgem's deliberate policy to raise standing charges and lower unit rates. This paper shows that:

- About half of PPM customers have smart meters and it costs no more to serve them than direct debit customers so they should not be charged more. Indeed, the price cap did set rates specifically for them at the same level as those paying by direct debit until Ofgem revoked them in October 2020.
- Standing charges for all payment methods should be substantially lower according to Ofgem's own analysis of costs. When Ofgem introduced the price cap in 2019 it lowered only the unit rates and left standing charges unaltered, even though they greatly exceeded the costs suppliers incurred in serving customers.
- Since then, Ofgem has added to the standing charge some network costs that were previously recovered through the unit rate and some of the costs of paying suppliers to take on the customers of failed suppliers. Ofgem's justifications for these decisions appear flawed and contrived.

High standing charges had contributed to the energy crisis by encouraging the entry of firms that were more intent on capturing these payments than on managing their energy costs effectively. Having not bought enough energy in advance they were vulnerable to collapse when the wholesale price of energy rose.

Raising the standing charge rather than the unit rate has not only disproportionately affected low-income households but also increased overall demand for energy, exacerbating carbon emissions and reducing the UK's energy security.

The government should act to reduce standing charges permanently by removing VAT from them. If Ofgem restructured the price cap to minimise the standing charge the cost of doing that would be drastically cut.

Introduction - the composition of energy bills

1. Gas and electricity bills consist of a fixed ('standing') charge per day and a price per unit of energy consumed.

2. For households both these elements are constrained by the price cap set by the energy regulator Ofgem[1,2].

3. In addition, unit rates are currently reduced below those set by the price cap by the Energy Price Guarantee (EPG), which the government introduced following the sharp increases in wholesale energy prices in 2021-22[3].

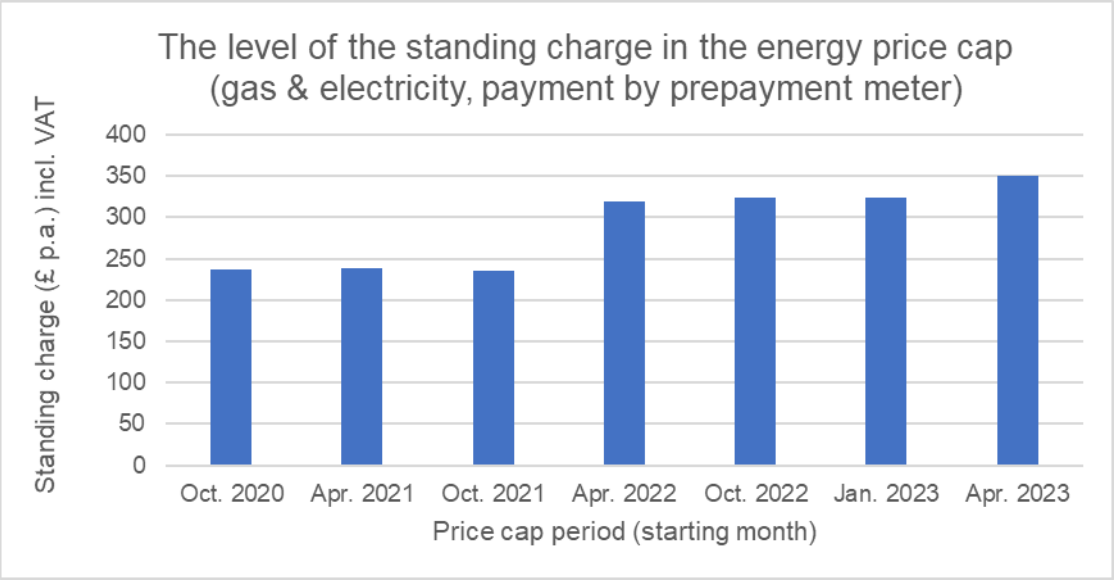
4. This winter every household's electricity bill was also discounted by a total of £400 by the Energy Bills Support Scheme[4] although some prepayment customers did not benefit[5]. This scheme does not continue from April 2023.

5. VAT is charged at 5% on both the standing charge and the energy used.

[1] The price cap applies to domestic consumers' default or standard variable tariffs (SVTs). (If a customer does not choose a specific plan, for example after a fixed tariff that provides a locked-in rate for a designated term ends, the supplier moves them to a default tariff.)
[2] Although note that when it was introduced in 2019 it reduced only the unit rate, leaving the standing charge at the prevailing level (see paragraph 36).
[3] The EPG (in operation since October 2022) is a fixed discount per unit for each of gas and electricity consumed by households (2.2p/kWh for gas and 16.6p/kWh for electricity in Great Britain from January to March 2023) regardless of payment method. (*Policy paper Energy Price Guarantee* Gov.uk Updated 15 March 2023.)
[4] This is being done in six monthly instalments, of £66 in October and November 2022 and £67 from December 2022 to March 2023.
[5] For those with smart prepayment meters the discount is credited directly to the meter. Those with traditional prepayment meters receive it as either redeemable vouchers or an automatic credit when they top-up at their usual top-up point. However, it was reported on 20 February 2023 that 24% of vouchers remained unclaimed, according to data from the Department for Business, Energy and Industrial Strategy (BEIS). (https://www.theguardian.com/money/2023/feb/20/one-in-four-vouchers-for-prepayment-meters-unredeemed-in-britain)

Standing charges have increased sharply under the price cap

6. Standing charges have increased rapidly since the price cap was introduced four years ago. They are highest for people with prepayment meters (PPMs), and these have risen by 48% since October 2020 when a separate price cap initiated by the Competition and Markets Authority (CMA) came to an end.



7. Standing charges for electricity vary by region. Thus, the dual fuel (i.e. gas and electricity) PPM standing charge averages £350 p.a. (including VAT) across Great Britain but ranges from £296 p.a. in London to £382 p.a. in Southern Scotland and in North Wales and Mersey.

Standing charges mean prepayment customers pay more for energy

8. Announcements about the price cap and government support for energy consumers cite the level of bills of households with 'typical' consumption. Such households pay £45 p.a. (i.e. 2%) more if they have a PPM rather than pay by direct debit, as this table shows:

TABLE 1
Energy bills of households with typical consumption[6] April – June 2023 (incl. VAT)

£	Price cap			EPG level
	Gas[a]	Electricity[a,b]	Total	Total
Payment method:				
Direct debit	1,619	1,661	3,280	2,500
Standard credit (payment on receipt of bill)	1,719	1,763	3,482	2,702
Prepayment meter	1,679	1,646	3,325	2,544
Difference prepayment cf. direct debit			45	45

Source: Ofgem[7]; Gov.uk[8].
Notes:
[a] Average of 14 network areas.
[b] Customers with single rate metering arrangement (cf. multi-register metering arrangement).

9. This excess is entirely accounted for by the price cap setting the dual fuel standing charge highest for those with PPMs, at £350 p.a. (including VAT):

TABLE 2
The standing charge in the energy price cap April – June 2023

£	Gas	Electricity[a,b]	Total	Incl. VAT
Payment method				
Direct debit	101	184	285	300
Standard credit (payment on receipt of bill)	119	207	326	343
Prepayment meter	131	202	333	350
Difference prepayment cf. direct debit				50

Source: Ofgem[9]
Notes:
[a] Average of 14 electricity distribution network areas.
[b] Customers with single rate metering arrangement (cf. multi-register metering arrangement).

10. However, the official figures understate the extent to which households with PPMs pay more than those who pay by direct debit as PPM customers generally use significantly less energy than the typical amount.

[6] Typical domestic consumption values (12,000 kWh p.a. for gas and 2,900 kWh p.a. for electricity).
[7] Level of the default tariff cap for typical domestic consumption values (source: letter at https://www.ofgem.gov.uk/publications/default-tariff-cap-level-1-april-2023-30-june-2023).
[8] EPG average unit rates (*Energy Price Guarantee: regional rates, April to June 2023* Gov.uk Updated 15 March 2023) applied to typical domestic consumption values.
[9] Level of the default tariff cap for Nil kWh (source: subsidiary document at https://www.ofgem.gov.uk/publications/default-tariff-cap-level-1-april-2023-30-june-2023).

High standing charges disproportionately affect low-income households, particularly prepayment customers

11. Low-income households spend less on energy than high-income households, as shown in Annexe 1. For example, those in the lowest income decile (the poorest 10%) spent on average just £858 in the latest year for which figures are available, the financial year ending 2021[10]. All income groups' spending is likely to have risen in response to the energy price rises of 2022 but the spending of those with the lowest incomes is likely to have remained very constrained. While their spending will have been boosted by the Energy Bills Support Scheme that has now ceased (see paragraph 4).

12. This means a higher proportion of what they pay goes on the standing charge, buying them no energy, and overall, they pay the highest price per unit of energy.[11]

13. Most prepayment customers are low-income households[12] and as such typically spend less on energy than other households. Thus, the higher PPM standing charges they face constitute a bigger percentage cost increase than the official figures suggest (6%[13] in the case of those in the lowest income decile).

14. The higher standing charges diminish further the amount of energy such low-income households can buy. The £350 p.a. standing charge accounts for 41% of what those in the poorest 10% of households have available to spend on energy and leaves them with only £508 worth of gas and electricity every year.

15. These higher costs lead to many of those on prepayment meters self-disconnecting. A recent report by Citizens Advice found that 33% of those on prepayment meters (more than 3 million people) went without energy at some point last year because they couldn't afford to top their meters up.[14] The extra £50 p.a. they are forced to pay on standing charges would otherwise have bought them an additional 40 days of heating[15].

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[10] Weekly expenditure on electricity and gas (£9.30 and £7.20, respectively) multiplied by 52. Source: Family Spending (Released July 2022) Table A6.

[11] As such they are likely to satisfy Ofgem's definition of consumer vulnerability: "when a consumer's personal circumstances and characteristics combine with aspects of the market to create situations where he or she is:

- significantly less able than a typical domestic consumer to protect or represent his or her interests; and/or
- significantly more likely than a typical domestic consumer to suffer detriment or that detriment is likely to be more substantial." *Consumer Vulnerability strategy* (October 2019) Ofgem, p.7.

They pay the highest overall rate for the energy they use, and their low income means they are less able to afford to pay these high prices so will suffer particular detriment.

[12] Prepayment customers are significantly more likely to have low income:

TABLE 3
Income by payment type

%	Direct debit customers	Standard credit customers	Prepayment customers
<£18k	16	25	48
£18k - £36k	21	17	16
>£36k	29	18	6
Don't know / refused	35	41	31

Source: CMA, Energy Market Investigation (2016) Appendix 9.6 Table 2.

[13] I.e. £50/£858. In fact, PPM customers pay marginally less per unit of energy than direct debit customers but this doesn't affect this figure.

[14] *Kept in the dark - the urgent need for action on prepayment meters* Citizens Advice January 2023 p.6.

[15] Assuming 1 kW of gas heating for 12 hours per day @ EPG unit rate of 11p per kWh (inc. VAT).

Government intervention to limit prepayment standing charges

16. The government has announced that from 1 July 2023 until 31 March 2024 customers on PPMs "will be compensated through the EPG for the higher cost of their energy compared with direct debit customers... saving them around £45 a year on energy bills"[16]. This appears to mean that the EPG will pay to bring the higher standing charges of PPM customers down to the level of those who pay by direct debit.

17. However, PPM customers have been left to pay this extra for the three months until July and it is unclear what will happen from April next year. Notwithstanding this help standing charges will remain very high for all consumers.

18. It is notable that this government initiative, which is estimated to be costing the tax-payer £200m., appears to be a direct response to Ofgem's questionable approach to setting the price cap. Chancellor Jeremy Hunt said it was "clearly unfair that those on prepayment meters pay more than others" and Energy Secretary Grant Shapps said: "Charging prepayment meter customers more to receive their energy is a tax on some of our most vulnerable."[17]

19. This intervention has become necessary because of the very sharp increase in standing charges in the last few years, including those of PPMs, which has been a deliberate policy of Ofgem, as subsequent sections of this paper will show.

20. If the government wanted to keep standing charges low permanently it should remove VAT on them. The cost to the government of doing this would be greatly reduced if Ofgem restructured the price cap to set the standing charge at the level of costs.

[16] *Policy paper Energy Price Guarantee* Gov.uk Updated 15 March 2023 p.6.
[17] https://www.bbc.co.uk/news/business-64930953

Smart meters and debt control mean prepayment standing charges should not be higher

Smart meters

21. In 2014 Ofgem published the conclusions of a review of suppliers' costs[18] and said that while the costs of serving prepayment customers were generally higher than for direct debit customers[19] they would be reduced by smart meters. Thus, for example, smart meters' ability to operate in prepayment mode removed the need to install and maintain a specialised prepayment meter for customers paying in this way. Smart meters were expected to be rolled out to all domestic consumers by the end of 2020.

22. Two years later the CMA went further. During its Energy Market Investigation, it analysed the costs to suppliers associated with serving customers using different payment methods. It said that it expected that the higher cost of serving prepayment customers (relative to direct debit customers)[20] would be "*substantially eliminated* [our emphasis] as a result of the roll-out of smart meters" [21].[22]

23. Note that these lower costs of serving customers should be reflected in the standing charge whereas the costs of supplying them with energy would determine the unit rate.

Previous PPM cap levels

24. In fact, when the current price cap for those on default tariffs started in January 2019 it included a cap for 'fully interoperable smart prepayment', which was set at the same level (for both the standing charge and unit rate) as the direct debit cap. This continued until September 2020. From October 2020 the default tariff cap has merely specified prices for 'prepayment', with the standing charge set significantly higher than for direct debit.

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[18] *Price differences between payment methods - open letter* Ofgem 20 May 2014 pp.1,8.

[19] Ofgem found the costs of supplying prepayment customers were generally higher than for direct debit customers due to:

(i) the need to install a PPM at the customer's premises, which is more expensive to buy and maintain than a credit meter;

(ii) prepayment relying on a bespoke payment infrastructure (NB Prepayment Meter Infrastructure Provision – PPMIP – is a system for reconciling back to the relevant energy supplier the advance payments made by prepayment customers at outlets such as corner shops and post offices);

(iii) issues specific to prepayment customers, such as problems topping up the meter, which mean they are more likely to call their supplier, resulting in higher costs to serve.

(*Price differences between payment methods - open letter* Ofgem 20 May 2014 p.4.)

[20] The CMA said the major indirect costs of serving prepayment customers differed from those of serving direct debit customers and were:

(i) the cost of metering: prepayment meters are more costly than credit meters as they have additional functionality;

(ii) the cost of collecting payment: this consists of the PPMIP (which provides management information and generally acts as a conduit for data, processing it for suppliers and also providing services such as replacement of the card keys prepayment customers use to add credit to their meters) and the actual collection of cash via the National Service Infrastructure Providers (NSPs) – Paypoint, Post Office and Payzone – which provide the infrastructure that deals with the payment.

Energy Markets Investigation Final report June 2016 CMA Appendix 9.8 paragraphs 30-32.

[21] *Energy Markets Investigation Final report* June 2016 CMA Appendix 9.8 paragraphs 2-3 (similarly paragraph125).

[22] There would then be no, or negligible, differential costs of metering: the existing costs of PPMIP would disappear and the services of payment providers would not be needed as prepayment meter customers could top up by phone. (*Energy Markets Investigation Final report* June 2016 CMA Appendix 9.8 paragraph 125.)

25. This change coincided with the removal at the end of 2020 of the 'Safeguard Tariff', a price cap for PPM customers that had been in place since April 2017 following a recommendation by the CMA in its Energy Markets Investigation[23].

TABLE 4
Level of dual fuel annual standing charges in price caps before and after removal of the Safeguard Tariff (incl. VAT)

£	From April 2020	From Oct. 2020	From April 2021
Safeguard tariff	238.31	236.98	-
Default tariff cap:			
Smart PPM	188.80	-	-
PPM	-	236.98	237.86
Direct debit	188.80	184.17	187.94

Source: Ofgem

26. It is egregious that the appropriate protection for those with smart prepayment meters was removed and these customers subject to higher charges seemingly without justification or explanation[24].

Debt control

27. The control of debt that PPMs offer is an argument for reducing PPM standing charges below direct debit standing charges.

28. The CMA report pointed out that bad debt was not attributable to prepayment, which suggests that prepayment customers may actually be cheaper to serve. While those in debt are frequently transferred to prepayment meters in order to recover that debt it is not actually a cost of prepayment as it arose in other forms of payment (direct debit or standard credit). Prepayment meter customers pay in advance and cannot incur debt except in certain limited circumstances and then just for small amounts.[25]

Implications for the price cap and smart meter rollout

29. Approximately half of prepayment meters are smart[26]. It is not appropriate for customers with these to pay higher standing charges given that it costs no more to serve them.

30. Moreover, the higher charges for all those with PPMs (regardless of whether they are smart or not) coupled with remote switching of smart meters to prepayment mode without customers' consent are threatening consumers' acceptance of smart meters.

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[23] The CMA had recommended a price cap because PPM customers were subject to various competition constraints that other customers weren't and the level of detriment suffered in terms of prices was particularly high, resulting in abruptly curtailed consumption. The CMA believed the roll-out of smart meters was necessary for addressing certain adverse effects on competition with respect to PPM customers. Those with fully interoperable (SMETS 2) smart meters were excluded from the Safeguard Tariff because the CMA believed that they would confer access to a wide range of tariffs. (*Energy Markets Investigation Summary of final report* June 2016 CMA paragraphs 244-248.)

[24] The letter announcing and explaining the new levels of the default tariff cap made no mention of this change. *Default tariff cap update for 1 October 2020* (Letter from Anna Rossington) Ofgem 7 August 2020 https://www.ofgem.gov.uk/publications/default-tariff-cap-level-1-october-2020-31-march-2021

[25] *Energy Markets Investigation Final report* June 2016 CMA Appendix 9.8 paragraphs 33, 60, 65-66,117-118.

[26] *Kept in the dark - the urgent need for action on prepayment meters* Citizens Advice January 2023 p.16.

31. Ostensibly standing charges could be lowered just for those PPM customers with smart meters but it would be unreasonable for others to pay more because they don't have a smart meter and having two sets of prices for PPM customers would be unduly complex.

32. Maintaining higher prices for non-smart PPMs would also reduce suppliers' incentive to install smart meters. Indeed, it could be said that suppliers should not be able to charge more for these given that they should have completed the roll-out of smart meters to all customers by now.

33. The control of debt offered by PPMs is a further argument for reducing all PPM charges to the direct debit level (or below).

34. Reducing all PPM standing charges to the direct debit level or below would provide consumers with a means of controlling their debt that did not penalise them financially. It would also eliminate a lot of consumer resistance to both PPMs and smart meters.

All standing charges should be substantially lower

35. Not only should PPM standing charges be reduced to the level of direct debit standing charges (or below) but standing charges should be substantially reduced for all payment methods. This is because the current level of the dual fuel standing charge for non-PPM customers greatly exceeds (by a margin of the order of £200) the costs suppliers incur in serving a customer. This is according to Ofgem's own analysis of suppliers' costs, which is set out in Annexe 3.

Setting the price cap

36. The price cap Ofgem introduced in 2019 lowered only the unit rate, leaving the standing charge unaltered even though it greatly exceeded the costs suppliers incurred in serving customers.[27] The price cap thus conferred the biggest savings on the high-income consumers who use most energy.[28]

37. Ofgem opting to reduce the unit rate and not the standing charge was all the more surprising given the difficulty of quantifying the many costs of suppliers that vary with the amount of energy supplied, which are recoverable through the unit rate. This led Ofgem to set the price cap above the estimated cost level, reducing the savings to each consumer by approx. £39 p.a. (incl. VAT).[29] The few costs that should be recouped through the standing charge (those that relate to the number of customers served rather than the amount of energy supplied) can be estimated much more accurately and transparently than suppliers' other costs. (See Annexe 3.)

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[27] Ofgem set the standing charge in the default tariff cap at the current average level of the standing charge in default tariffs, £175 p.a., during the first cap period in 2019. (Decision – *Default tariff cap – Overview document* November 2018 Ofgem paragraph 2.94.) It justified this on the basis that it apparently estimated the cost-reflective level of the standing charge at £220 p.a. in 2017 terms (op. cit. paragraph 2.96.) However, it did not explain how this cost estimate was arrived at and it appears implausible given that Ofgem agreed with analysis set out in this paper that almost all network and policy costs depend on the amount of energy supplied (see Annexe 3), in which case they should not be recovered through the standing charge.
This estimate was plainly not credible in any case: it suggested that profit-maximising energy suppliers with market power over passive consumers were then pricing at below cost the part of energy tariffs which consumers cannot avoid paying.

[28] Ofgem acknowledged that the default tariff cap provided the smallest savings to low-income households: *Default Tariff Cap: Policy Consultation Appendix 14 – Initial View on Impact Assessment* May 2018 Ofgem paragraphs 4.70-4.71.

[29] Ofgem added extra amounts to the level of the default tariff cap in order to mitigate variation in operating costs and uncertainty as to the efficient level of costs:

- An allowance of £23 p.a. to allow for suppliers that have higher operating costs because they have a customer base that is more expensive to serve.
- An allowance of £3 p.a. to allow for uncertainty in wholesale costs due, for example, to changes in demand volumes (such as caused by extreme weather).
- 'Headroom' of £10 p.a.: added to the estimated benchmark level of costs to capture the residual risk and uncertainty faced by an efficient supplier that was not already captured in the assessment of costs.

Together, these measures increased the level of the default tariff cap and reduced savings for consumers by approx. £39 p.a. (incl. VAT) across all customers in the 2017 baseline. (*Default Tariff Cap: Decision Appendix 2 – Cap level analysis and headroom* November 2018 Ofgem Table A2.1 p.10.) NB The figures corresponding to the second and third bullets above were higher, £4 and £12 respectively, in the first cap period (January to March 2019) (op. cit. paragraph 3.66).

Carbon emissions and security of supply

38. Setting the price cap like this raised overall demand for energy and so increased carbon emissions and reduced the UK's energy security, although Ofgem attempted to downplay these effects (see Annexe 2 of this paper). This contravenes Ofgem's principal objective to protect the interests of existing and future consumers, including their interests in the reduction of greenhouse gases and in security of supply[30].

Economic efficiency

39. The standing charge is also the element of energy bills for which there is the strongest argument for capping on economic efficiency grounds. This is explained in Annexe 6.

[30] *Our Strategy* 2014 Ofgem (Ofgem's Corporate Strategy) (https://www.ofgem.gov.uk/sites/default/files/docs/2014/12/corporate_strategy_0.pdf) p.4. Ofgem also claims to aim to deliver through its regulation a consumer outcome of reduced environmental damage. *Op. cit.* p.10.

The perverse predilection for lowering the unit rate rather than the standing charge

40. Since the price cap was introduced in 2019 Ofgem has made policy decisions that have added significantly to the standing charge.

Network costs

41. Ofgem decided that 'residual' electricity network charges (those not driven by either the amount of electricity consumed or the number of users), which were previously recovered through the unit rate, were instead to be recovered through a substantial fixed charge for all consumers (i.e. added to the standing charge).

42. Ofgem acknowledged that this would increase bills for households that use least energy[31]. As pointed out in paragraph 11 above these tend to be low-income households. It has inevitably also increased carbon emissions and reduced the UK's energy security.

43. This policy was apparently driven by a desire to ensure that those who have invested in their own generation (installing solar panels etc) so consume less electricity from the grid do not avoid contributing to network costs. However, it is ill-conceived, disproportionate and appears highly contrived, for reasons set out in Annexe 5. It is also at odds with previous analyses of network costs by both Ofgem and the CMA (see Annexe 3).

Supplier of last resort (SoLR) costs

44. Ofgem has also added the costs of paying suppliers to take on the customers of failed suppliers[32] to the standing charge for electricity (although they have been added to the unit rate for gas). This accounted for much of the large increase in the standing charge that occurred in April 2022[33].

45. Ofgem did review whether such recovery via a fixed charge was more suitable than a usage-based (volumetric) alternative (i.e. recovery through the unit rate)[34]. It concluded that recovery through standing charges rather than unit rates generally increased costs for low-income consumers and where they were on PPMs could increase self-disconnection.

46. Nevertheless, it decided against increasing unit rates instead because there were exceptions to this rule, viz. some high consuming customers, some of whom are vulnerable, who could lose out. These included disabled consumers who use electricity-

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[31] "Those who use least electricity [will] see an increase in their residual charge. Those who use the most will see a decrease." (*Targeted charging review: decision and impact assessment* November 2019 Ofgem pp. 68, 71.) "We recognise that charges for some low-using consumers will be higher than they are today – around £24 for our illustrative low user, while for others they will fall further – around £40 for our high user." (Op. cit. p.73)

[32] Recovery of the costs of the Supplier of Last Resort (SoLR) levy.

[33] Ofgem estimated that the SoLR costs to be recovered from electricity consumers equated to a fixed charge of around £34 per household. *Follow up on our review into the arrangements for recovering the costs of supplier failure* Letter from Jonathan Brearley, CEO, Ofgem 18 August 2022 https://www.ofgem.gov.uk/sites/default/files/2022-

[34] *Follow up on our review into the arrangements for recovering the costs of supplier failure* Letter from Jonathan Brearley, CEO, Ofgem 18 August 2022 https://www.ofgem.gov.uk/sites/default/files/2022-08/Follow%20up%20on%20our%20review%20into%20the%20arrangements%20for%20recovering%20the%20costs%20of%20supplier%20failure%20.pdf

powered equipment and consumers with electric heating, including some in social housing and those in areas off the gas grid. However, it would be more appropriate to address these relatively few instances with specific measures targeted at those who have a need to consume more electricity rather than forcing all low-income households to pay more.

47. Ofgem also decided against changing its policy partly because of the short period of time between the review (August 2022) and the next price cap period, which started in October 2022. However, that doesn't apply to the subsequent price caps.

Energy price guarantee

48. The government's Energy Price Guarantee has also (until now) reduced only the unit rate, thereby similarly benefitting mainly high-income households who consume most energy and adversely affecting carbon emissions and energy security[35].

[35] From 1 July 2023 to 31 March 2024, it will reduce the PPM standing charge to the level of those who pay by direct debit.

A vicious circle: high standing charges and the energy crisis

49. Ofgem structuring the price cap in this way (i.e. lowering the unit rates that suppliers could levy but not the standing charges) contributed to the energy crisis. It heightened suppliers' exposure to the increases in wholesale energy prices that caused them to lose money serving customers protected by the cap. Perhaps more significant, however, is how the price cap is likely to have perpetuated a flawed business model.

50. When the price cap was introduced in 2019 the dual fuel (i.e. gas and electricity) standing charge was already over £100 more than the efficient level of it (i.e. the costs suppliers incurred in serving a customer as opposed to the costs of the energy they supplied). (This is explained in Annexe 3.)

51. It is distinctly possible that a number of the suppliers that failed in 2021 had entered the market more focused on acquiring customers in order to capture the 'rent' of standing charges than on managing their energy costs effectively. For example, Citizens Advice has described how many failed suppliers amassed customers very quickly by offering deals that didn't cover their costs and hadn't bought enough energy in advance.[36] Certainly the biggest company to collapse, Bulb, with 1.7 million customers, was brought down by its high levels of debt, having expanded too fast.

52. The energy crisis in turn led to yet higher standing charges. Standing charges set by the price cap rose sharply in April 2022 and much of that increase was accounted for by the costs of paying suppliers to take on the customers of failed suppliers (see paragraph 44 above).[37]

53. Recovering these costs through the standing charge rather than the unit rate means that the price cap, which was intended to save some households something like £100 p.a.[38], has actually contributed to all consumers paying a similar amount *extra*, with the low-income households who most needed protection by the price cap the worst affected.

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[36] *Market Meltdown How regulatory failures landed us with a multi-billion-pound bill* Citizens Advice January 2022 p.3.

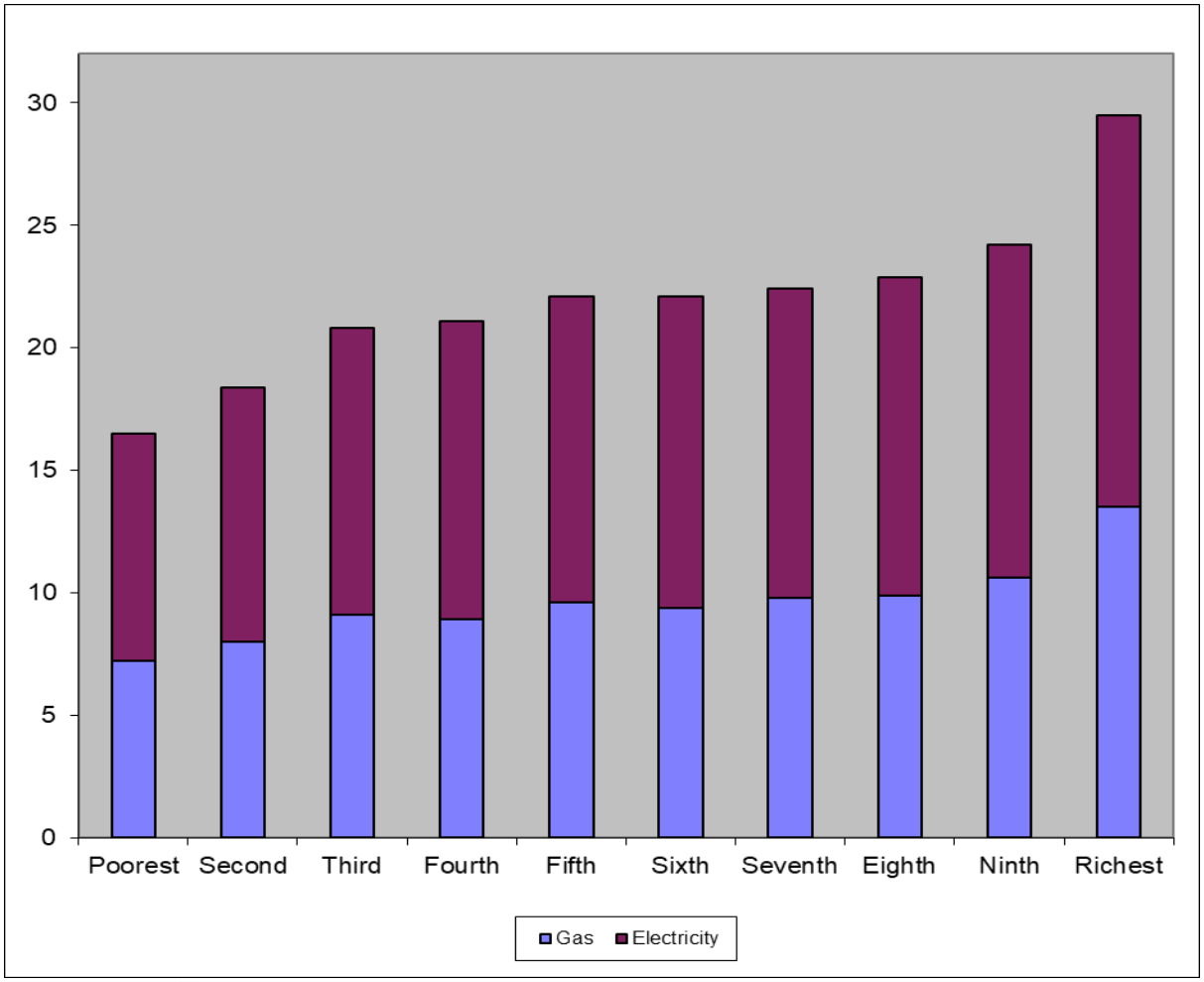
[37] Recovery of the costs of the SoLR levy.

[38] Ofgem estimated the detriment from excessive default tariffs to the 14 million domestic (i.e. household) customers then on them at £1.5 billion p.a. (*Default Tariff Cap: Decision – Appendix 11 – Final impact assessment* November 2018 Ofgem paragraph 1.11.) The CMA had estimated the detriment to customers of the Big Six energy suppliers conservatively at £1.4 billion p.a. (*Energy Markets Investigation Final report* June 2016 CMA paragraphs 10.125-10.126.)

Annexe 1: Energy spending increases with household income

Spending on energy bills increases with income:

Household Expenditure on Gas and Electricity (£ per week) by Disposable Income Decile (UK, financial year ending 2021)



Source: ONS[39]

Energy spending of all income groups is likely to have risen following the energy price increases in 2022 but that of the lowest income groups is likely to have been very constrained and so to have risen much less than higher income groups. It will also have

39

TABLE 5
Average household expenditure by gross income decile group (UK, financial year ending 2021)

£	Lowest ten per cent	Fifth decile group	Highest ten per cent
Gross annual income	<13,000	31,400 - 38,200	>90,500
Weekly expenditure:			
Electricity, gas and other fuels	16.90	23.20	31.60
Electricity	9.30	12.50	16.00
Gas	7.20	9.60	13.50
Other fuels	[0.40]	1.10	2.00

Source: ONS, Family Spending (Released July 2022) Table A6.

been boosted by the Energy Bills Support Scheme (see paragraph 4) but that has now ceased.

Once households' spending on energy bills is adjusted for the high cost of the standing charge it is apparent that energy *consumption* of low-income households is even lower relative to high-income households than energy *spending* is.

In 2018 Ofgem confirmed that low-income households consume less than high-income households[40]. However, in 2020 it said that "energy expenditure does not in general rise monotonically with income"[41].

That assessment followed an exercise in which incomes data in a survey of household spending[42] were *equivalised*, i.e. adjusted according to household size to reflect the fact that a large household requires more income to attain the same standard of living as a smaller household (and vice versa)[43]. However, the methodology adopted was not fully explained and appears flawed. For example, data on energy expenditure were also equivalised[44].

Equivalisation may be better suited to assessing the distributional impact of policies (its purpose according to the HM Treasury *Green Book*) than explaining household demand for energy. Size of household may indeed help to explain energy demand, but this would ideally be investigated by econometric modelling of energy demand, with size of household included as a separate explanatory variable (in addition to income, for example).

Furthermore, it is understood that the survey data on energy expenditure were converted to energy consumption using an average price from BEIS[45]. However, lower income households were likely to pay a higher unit price and if they do pay a higher price the analysis will overstate their consumption[46]. Moreover, the standing charge is a higher proportion of the bill of low consumption households so they pay a higher average price and the analysis will have overstated their consumption for that reason too.

Ofgem's conclusion then was also at odds with what consumer bodies accustomed to looking at the problems faced by low-income households observe[47].

In fact, Ofgem later appeared to have reversed its view (again) when in August 2022 it accepted that "there is a broad link between affluence and consumption"[48].

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[40] *Default Tariff Cap: Policy Consultation Appendix 11 – Headroom* May 2018 Ofgem paragraph 2.3. Similarly, a DECC paper reported a research finding that "evidence that a relationship between income and demand for domestic gas does exist". (*Annexe D Gas price elasticities: the impact of gas prices on domestic consumption – a discussion of available evidence* June 2016 DECC p.9.)
[41] *Assessing the distributional impacts of economic regulation* Ofgem May 2020 *Annexe – Understanding how energy spend varies with income* paragraph 34.
[42] ONS Living Costs and Food Survey
[43] The process is described in *The Green Book: Central government guidance on appraisal and evaluation* HM Treasury 2018 Annexe A3 *Distributional Appraisal* p.79.
[44] "Intuitively if income has been adjusted to reflect the fact that smaller households need less income to cover all their living costs – including energy – then it does not make sense to also scale up the energy consumption for those households in assessing the impacts. This feels like double counting. Ofgem have not provided an adequate explanation for why this is necessary." *Ofgem's Approach to Distributional Impacts: A Technical Assessment* Frerk, Maxine and Kenway, Joshua (Grid Edge Policy) Sept. 2020 p.7.
[45] *Ofgem's Approach to Distributional Impacts: A Technical Assessment* Frerk, Maxine and Kenway, Joshua (Grid Edge Policy) Sept. 2020 p.4.
[46] *Ofgem's Approach to Distributional Impacts: A Technical Assessment* Frerk, Maxine and Kenway, Joshua (Grid Edge Policy) Sept. 2020 p.5.
[47] *Ofgem's Approach to Distributional Impacts: A Technical Assessment* Frerk, Maxine and Kenway, Joshua (Grid Edge Policy) Sept. 2020 p.8.

Annexe 2: The effect of the default tariff cap on carbon emissions and security of supply

It is a frequent misconception that, as a necessity, consumption of energy is largely unaffected by its price. The CMA cited[49] a study[50] which found that in the short run a 1% rise in domestic electricity prices reduces demand by around 0.35% (i.e. an elasticity of 0.35). Elasticity is significantly greater in the long run (0.85) as consumers are able to respond to increased prices by installing energy efficiency measures. The CMA also cited a review[51] of studies of elasticities across households for electricity and gas which concluded "on average, natural gas price elasticities are greater than electricity or fuel oil elasticities".

Ofgem's principal objective is to protect the interests of existing and future consumers, including their interests in the reduction of greenhouse gas emissions and in security of supply[52]. However, Ofgem's consultation and 'Initial View on Impact Assessment' for the default tariff cap in May 2018 did not even mention greenhouse gas emissions or security of supply, let alone seek to attempt to reduce emissions or improve security of supply[53]. Ofgem also downplayed the likely effect on consumption (which would determine emissions and security of supply)[54]. Guidance on conducting impact assessments is very clear that the effect on total energy use and greenhouse gas emissions should be quantified and costed[55].

Greenhouse gas emissions

Ofgem's final impact assessment in November 2018 estimated that the default tariff cap would increase total UK domestic greenhouse gas emissions by between -0.01% and 0.40% with a value of £0.28 million p.a. to £17 million p.a. based on the price of carbon[56]. However, it was based on estimates of energy price elasticities that were either at or below the lowest figures in the ranges of estimates in surveys of the studies of energy price elasticities that Ofgem cited:

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[48] *Follow up on our review into the arrangements for recovering the costs of supplier failure* Letter from Jonathan Brearley, CEO, Ofgem 18 August 2022 https://www.ofgem.gov.uk/sites/default/files/2022-08/Follow%20up%20on%20our%20review%20into%20the%20arrangements%20for%20recovering%20the%20costs%20of%20supplier%20failure%20.pdf

[49] *Energy Market Investigation Final report* June 2016 CMA paragraph 8.9.

[50] Espey, JA and Espey, M (2004), *Turning on the Lights: A Meta-Analysis of Residential Electricity Demand Elasticities*, Journal of Agriculture and Applied Economics, 36(01)

[51] Gillingham, K, Newell, R and Palmer, K (2009), *Energy efficiency economics and policy*, Resources for the Future Discussion Paper 09-13

[52] *Our Strategy* 2014 Ofgem (Ofgem's Corporate Strategy) (https://www.ofgem.gov.uk/sites/default/files/docs/2014/12/corporate_strategy_0.pdf) p.4. Ofgem also claims to aim to deliver through its regulation a consumer outcome of reduced environmental damage. *Op. cit.* p.10.

[53] In the 413 pages of consultation documents for the default tariff cap Ofgem devoted just three small paragraphs to the possible impact "on the environment". *Default Tariff Cap: Policy Consultation Appendix 14 – Initial View on Impact Assessment* May 2018 Ofgem paragraphs 4.162-4.164.

[54] It said that "For most customers, it might be expected that price elasticities are low as energy is an essential good." *Default Tariff Cap: Policy Consultation Appendix 14 – Initial View on Impact Assessment* May 2018 Ofgem paragraph 4.24. It cited "a range of studies" implying that domestic demand for gas in the UK is relatively inelastic (in fact just two studies) and made no mention of the CMA's (much larger) estimates (see opening paragraph of this Annexe) or those cited in Annexe 6 of this document.

[55] The Green Book Central Government Guidance on Appraisal and Evaluation 2018 HM Treasury p.69.

[56] *Default Tariff Cap: Decision – Appendix 11 – Final impact assessment* November 2018 Ofgem paragraphs 7.54 - 7.57.

- For gas Ofgem referred to a review of price elasticities carried out for the Department for Business, Energy and Industrial Strategy (BEIS)[57].This found that studies of the price elasticity had produced estimates between -0.1 (in the short run, with the corresponding long run estimate being -0.17) and -0.28. This review also found evidence in the form of an additional study that the elasticity lies towards the lower magnitude end of the range. Ofgem used -0.1.[58]

- For electricity Ofgem referred to the paper the CMA had cited which summarised previous studies and yielded price elasticities of between -0.35 in the short run and -0.85 in the long run (see first paragraph of this Annexe). Ofgem's September 2018 consultation had adopted -0.35 but its November 2018 decision document also mentioned three other studies which estimated the short run price elasticity of demand as ranging from -0.20 to -0.24. Ofgem used -0.26, which was apparently the average of the (now four) studies although the paper it had previously relied on was based on 36 studies.[59]

Ofgem's choice of elasticities to use in modelling the effect on greenhouse gas emissions appears highly selective:

- Ofgem said the lowest figures (which are applicable only in the short run) were the most appropriate because these reflected the period the default tariff cap was expected to be in place. It said it would not expect consumers to alter their investment decisions based only on their knowledge of the temporary cap.[60] This was strange as consumers' behaviour would only ever be likely to be affected by prices, not their knowledge of a price cap, which in any case they would not expect to be withdrawn if doing so would lead to an increase in prices.

- Ofgem did not include various other studies that had been brought to its attention in response to all of its consultations and which found energy price elasticities of -0.27 and -0.48.[61]

- Ofgem did not incorporate the CMA's finding based on a review of studies that gas elasticities are greater than electricity elasticities, which had been found to lie between -0.35 and -0.85 (see first paragraph of this Annexe).

In addition, estimates of the effect of changes in overall energy bills on consumption may underestimate the effect on consumption and emissions. Demand may be even more responsive to reductions in the unit rate (as the default tariff cap brings about) than the overall bill (i.e. including the standing charge) because it is this that determines how much consumers save by foregoing consumption.

In consequence Ofgem's estimate of the potential effect of the default tariff cap on greenhouse gas emissions is likely to be misleadingly low. Using instead the corresponding long run elasticity estimates from the studies cited (0.85 for electricity and 0.28 for gas),

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[57] National Energy Efficiency Data Framework (NEED) report summary of analysis *Annexe D Gas price elasticities* (June 2016) DECC (now BEIS) p.10. (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/532539/Annexe_D_Gas_price_elasticities.pdf)

[58] *Default Tariff Cap: Statutory Consultation Appendix 11 – Draft Impact Assessment* September 2018 Ofgem paragraphs 5.84, 5.87.

[59] *Default Tariff Cap: Statutory Consultation Appendix 11 – Draft Impact Assessment* September 2018 Ofgem paragraphs 5.85, 5.88.

[60] *Default Tariff Cap: Statutory Consultation Appendix 11 – Draft Impact Assessment* September 2018 Ofgem paragraphs 5.89-5.93.

[61] *The case for a cap on the standing charge in energy bills* June 2019 David Osmon (IdealEconomics.com) Annexe 5.

which may be said to be more appropriate as they capture the entire effect of the price cap, would suggest an increase in UK domestic emissions due to the cap of approx. 1.2%, with a carbon value of approx. £50 million p.a.

Ofgem did not conduct a full environmental impact assessment and said that conducting one would be "disproportionate"[62]. However, it is clear that its cap may have had a very significant impact on greenhouse gas emissions.

Security of supply

Ofgem's consultations on the default tariff cap did not consider at all the effect of the increased energy consumption resulting from the default tariff cap on security of supply.

However, the impact assessment that formed part of its decision document said that a respondent to its statutory consultation had raised a concern that there could be an impact on security of supply.[63] Ofgem duly acknowledged that there was "a limited risk of an increase in energy consumption affecting security of supply over the potential period of the cap". It based this on the potential increase in consumption being relatively small; the existing spare capacity in the supply of gas and electricity; and demand for gas and electricity decreasing over recent years and being expected to continue to fall.[64]

It seems that Ofgem had sought to avoid its duty to protect the interests of consumers by reducing greenhouse gas emissions and improving security of supply.

[62] *Default Tariff Cap: Decision – Appendix 11 – Final impact assessment* November 2018 Ofgem paragraph 7.53.
[63] *Default Tariff Cap: Decision – Appendix 11 – Final impact assessment* November 2018 Ofgem paragraph 7.59.
[64] *Default Tariff Cap: Decision – Appendix 11 – Final impact assessment* November 2018 Ofgem paragraph 7.65.

Annexe 3: The efficient level of the standing charge

The efficient level of the standing charge depends on which elements of the costs incurred by suppliers should be recovered through it. This essentially depends on whether they are incremental costs of serving customers or, rather, related to the amount of energy consumed, in which case they should be recouped through the unit rate instead.

It is shown below that prior to the introduction of the default tariff cap in 2019 the average dual fuel standing charges levied by suppliers in default tariffs for non-PPM customers of £164 p.a.[65] was over £100 more than the efficient level of costs appropriately recovered through it of £60 p.a. (incl. VAT). In the four years since then standing charges have risen sharply, following various policy decisions (see paragraphs 40-47). They are now £300 p.a. for direct debit customers (see Table 2), so the current mark-up is likely to be of the order of £200 p.a.

Cost elements of the standing charge

In 2012 Ofgem considered which cost elements might be included in a fixed standing charge in all tariffs as part of its Retail Market Review reforms aimed at simplifying tariffs[66]. It assessed costs incurred by suppliers according to whether they varied with energy consumption and consulted on whether to adopt a narrow or wide definition of a standardised standing charge.

Ofgem said that under a 'narrow' definition the standing charge would include only network costs[67]. It estimated those costs that might be included under the widest definition of the standing charge[68] as shown in the following table[69]:

TABLE 6
Ofgem's estimate of costs to be included in the standing charge

		Illustrative annual cost for average consumer (£)	Recovered through	
			standing charge	unit rate
Network costs:	Gas transmission	6	X	✓
	Gas distribution	122	X	✓
	Electricity transmission	19	X	✓
	Electricity distribution	81	✓(£13)[d]	✓(£68)
Policy costs:	Energy Co. Obligation*	29 (gas), 29 (elec)	✓	X
	Warm Home Discount*	7 (gas), 7 (elec)	✓	X
Metering costs*		23 (gas), 15 (elec) [m]	✓	X
Other supplier fixed costs*		25 (gas), 25 (elec)	✓	X

* Not included under a narrow definition of the standing charge
[m] Metering costs estimates were based on traditional meters, not smart meters
[d] The Distribution Use of System (DUoS) fixed charge

[65] *Statutory Consultation – Default tariff cap – Overview document* September 2018 Ofgem paragraph 2.76.
[66] *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem (https://www.ofgem.gov.uk/publications-and-updates/standardised-element-standard-tariffs-under-retail-market-review).
[67] *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem Appendix 1 paragraph 1.2.
[68] *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem paragraph 2.10 p.10.
[69] *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem table 2.1, p.11.

Source: *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem (Table 2.1 p.11).

However, Ofgem did not conclude on whether to adopt a narrow or wide definition as it decided against fixing the standing charge because of opposition from respondents to its consultation, presumably energy firms[70].

Considering the possible elements of a fixed standing charge:

i) Network (transmission and distribution) costs

Ofgem determined that the bulk of the charges incurred by suppliers for use of the transmission and distribution networks should be recovered through the unit rate as they varied with the amount of energy consumed. Just a small element of electricity distribution costs was to be included in the standing charge[71].

The CMA's Energy Market Investigation went further. In setting the PPM price cap (see paragraph 25) for nil consumption at the average standing charge of the Big Six energy firms' PPM tariffs it broke the standing charge down into its components. It stated that "the value of the price cap at nil consumption does not include, nor needs to include, network costs since these are volume driven"[72]. It said that the network charging statements of the network companies defined 'use of system' charges to be nil at nil consumption[73].

Thus, it has been acknowledged that almost all (if not all) network costs should be recovered through the unit rate.

ii) Costs of government policies: the Energy Company Obligation (ECO), Feed-in tariffs (FITs), the Warm Home Discount (WHD) and the Renewables Obligation (RO).

These are all aimed at tackling fuel poverty and/or reducing carbon emissions. Annexe 4 describes how suppliers are charged for each of these policies.

Ofgem has confirmed that the costs that suppliers incur under three of these four schemes (ECO, FITs and RO) as well as for Contracts for Difference, the Capacity Market and AAHEDC[74] depend on the amount of energy supplied rather than the number of customers served. Thus, they would efficiently be recovered through the unit rate rather than the standing charge. It said that it would expect to design the default tariff cap to reflect this.[75]

The WHD was the exception. However, it is counter-productive for the costs of measures aimed at reducing fuel poverty or emissions to be included in the standing charge rather than the unit rate. This itself makes energy less affordable for low-income households.

In addition, smaller suppliers are exempt from the costs of three of the four policies (ECO, FITs and WHD). There is no justification for smaller suppliers' standing charges to reflect these costs given their exemption from them. Ofgem offered the justification for small suppliers' standing charges including these costs that it would enable the smaller

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[70] *The Retail Market Review – Updated domestic proposals* (October 2012) Ofgem paragraph 3.11.
[71] *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem Appendix 1 paragraphs 1.7-1.11.
[72] *Energy Market Investigation Final report* June 2016 CMA footnote 59 p.962.
[73] *Energy Market Investigation Final report* June 2016 CMA paragraph 14.144.
[74] Assistance for Areas with High Electricity Distribution Costs
[75] *Working paper #4: Treatment of environmental and social obligation costs under the default tariff cap* (April 2018) Ofgem paragraph 1.6, Table 2, paragraphs 4.8-4.9.

suppliers to recover their higher-than-average fixed costs.[76] However, it is not appropriate to require low consumption/low-income households to shoulder the burden of rectifying that problem.

Thus, it may be said to be inappropriate for these policy costs to be recovered through the standing charge.

iii) Metering costs

The costs incurred in providing meters clearly relate to serving customers so are appropriately recovered through the standing charge. The cost suppliers incur for providing domestic gas meters is regulated by a price cap, which was set at £15.93 p.a. for 2017-18[77]. Electricity meters appear to be cheaper to provide; they are less sophisticated than gas meters, which involve a hazardous substance, and the CMA allowed less for electricity meters when it set the PPM price cap[78].

Suppliers also need to pay for the smart meter roll-out. The cost of this was estimated at £1.50 per customer per year[79].

iv) Other fixed costs

Ofgem calculated these simply by subtracting the above costs from the typical standing charge levied by suppliers[80]. Given the lack of constraint on the amounts suppliers levy as standing charges this estimate is not meaningful and is liable to be a significant overestimate.

Ofgem has said separately that suppliers' other operating costs include the costs associated with billing and bad debt and costs associated with depreciation and amortisation[81]. It is not possible in this short paper to quantify all such factors and assess what proportion of them might be attributable to the standing charge. However, billing costs undoubtedly would be, while bad debt might be mainly attributable to charges for energy consumed, especially following an effective cap on the standing charge, as charges for energy supplied account for the bulk of energy bills.

Meter reading costs form another category of costs that are clearly attributable to the standing charge. However, the roll-out of smart meters will reduce this and the costs of serving customers generally[82].

Ofgem said suppliers earn a margin on their sales of energy too[83]. It does not seem appropriate for suppliers to earn a margin on the standing charge given that this merely enables a customer to receive supply of energy and does not itself confer benefit to consumers.

Thus, metering costs appear to be the main category of costs that do not vary with the level of consumption so are justifiably recouped through the standing charge. Other elements may

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[76] *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem Appendix 1 paragraph 1.36.
[77] *Metering charges from 1 April 2017* National Grid p.6. (http://www2.nationalgrid.com/UK/Services/Metering/Publications/Metering-Charges/).
[78] *Energy Market Investigation Final report* June 2016 CMA paragraph 14.122.
[79] *Energy Market Investigation Final report* June 2016 CMA paragraph 14.238.
[80] *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem Appendix 1 paragraph 1.47.
[81] *Retail Energy Markets in 2016* Ofgem p.31.
[82] *Energy Market Investigation Final report* June 2016 CMA paragraph 14.119 and paragraph 3 of Appendix 9.8.
[83] *Retail Energy Markets in 2016* Ofgem p.31.

be (possibly) a small element of electricity distribution costs; meter reading costs; billing costs; and some fraction of other overheads/other fixed costs.

Of the costs in Table 6 above, the only ones that are rightfully included in the standing charge are:

a) (possibly) electricity distribution costs (£13)

b) some proportion of the metering costs of £38, although note that this may be an over-estimate given the amounts cited in (iii) above, and

c) some fraction of the other fixed costs of £50.

This suggests that the appropriate level of the dual fuel standing charge for non-PPM customers prior to the imposition of the default tariff cap was of the order of £50-60 (say £60 including VAT). This was over £100 less than the average dual fuel standing charges levied by suppliers in default tariffs for non-PPM customers of £164 p.a.[84]

[84] *Statutory Consultation – Default tariff cap – Overview document* September 2018 Ofgem paragraph 2.76.

Annexe 4: How suppliers are charged for the costs of government social and environmental policies

This feeds into section (ii) of Annexe 3.

The policies in question are:

The Energy Company Obligation (ECO)[85]

This aims to reduce carbon emissions and tackle fuel poverty. It requires medium and large energy suppliers to install energy efficiency measures such as insulation. Each supplier's obligation is determined according to how much gas and electricity it supplies to its customers[86].

Feed-in tariffs (FITs)[87]

These encourage small-scale, low carbon generation but have largely closed to new applicants. Suppliers are required to make payments to individuals and organisations for generating and exporting low carbon electricity. The costs of the FIT scheme are spread across all electricity suppliers according to each supplier's share of the electricity market in terms of the amount of electricity supplied (taking into account FIT payments they have already made)[88].

The Warm Home Discount (WHD)[89]

This requires larger suppliers (more than 50,000 domestic customers) to provide support, primarily through bill rebates, to customers who are in or at risk of fuel poverty. These suppliers fund the scheme and manage the rebates process.[90] Each supplier's costs are liable to vary with the number of its customers so Ofgem considered there would be merit in this cost being recovered through the standing charge.[91]

Renewables Obligation (RO)

This requires suppliers to source a specified proportion of their electricity from eligible renewable sources or pay a penalty.

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[85] *Energy Market Investigation Final report* June 2016 CMA paragraphs 3, 6-20 of Appendix 8.1.
[86] *Energy Market Investigation Final report* June 2016 CMA paragraphs 11-14 of Appendix 8.1.
[87] *Energy Market Investigation Final report* June 2016 CMA paragraphs 3, 21-23, 26-28 of Appendix 8.1.
[88] *Feed-in Tariff Annual Report 2015-16* (Dec. 2016) Ofgem p.5 and *Feed-in Tariff: Guidance for Licensed Electricity Suppliers (Version 8.1)* (May 2016) Ofgem chapter 9.
[89] *Energy Market Investigation Final report* June 2016 CMA paragraphs 3, 24-27, 29 of Appendix 8.1 of and *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem paragraphs 1.31-1.36.
[90] Between October 2022 and March 2023 this is a one-off discount, typically on electricity bills, of £150. In England and Wales consumers should receive it automatically if they get pension credit or are on certain benefits and have 'high energy costs'. (Source: Moneysavingexpert.com February 2023.)
[91] *The Standardised Element of Standard Tariffs under the Retail Market Review* (February 2012) Ofgem paragraphs 1.34-1.35.

Annexe 5: Ofgem's Targeted Charging Review of network costs

Following a major review of electricity network charges[92] Ofgem replaced some usage related charges (i.e. charges related to the amount of energy supplied)[93] with a substantial fixed charge per consumer. This policy was ill-conceived, appears highly contrived and disproportionate and has increased bills for low-income households and carbon emissions.

Ofgem distinguished between the costs of running the electricity network that have a clear cost driver (which it calls "forward-looking costs") and those that don't and are in effect fixed ("residual costs"). The network companies' charges to suppliers should reflect the forward-looking costs so that (on the assumption that these are passed through in the unit rate) consumers are incentivised to use the network only if the benefit to them is greater than the additional cost they impose on the network.

The residual costs, which amount to about 40% of network charges, had previously been recovered from suppliers by a usage-related charge, like the forward-looking costs. However, to the extent that these charges were passed on to end consumers in the unit rate users who have their own generation (typically businesses and better-off households) were able to avoid paying them while still being able to make use of the network as and when they wished to. Such reductions in usage did not cause any reductions in residual costs so other users have ended up paying more. This problem was expected to grow as the amount of such distributed (or 'behind the meter') generation increased.

Seemingly following a principle articulated by the then Secretary of State for Business, Energy and Industrial Strategy that there should be no 'free riders'[94], Ofgem decided that these costs should instead be recovered through a fixed charge per customer.

This policy runs counter to the previous analyses of how network costs should be recovered of both Ofgem and the CMA (see Annexe 3). It will have various adverse effects and, notwithstanding the basic rationale outlined above, is ill-conceived. Moreover, Ofgem's impact assessment justifying this decision appears opaque and contrived:

1. The decision and impact assessment document[95] did not quantify the adverse effect of electricity consumers with their own generation avoiding paying the residual costs, which was the justification given for the new policy. In fact, only a very small proportion of users have their own generation, and this typically reduces their consumption by only a fraction, so it is difficult to understand the justification for such a significant change in policy and it appears to be a disproportionate response to the issue.

2. The decision and impact assessment document described the resulting fixed charge per customer on an "illustrative" basis as £67 p.a.[96] but it also stated that residual charges amounted to around £4 billion p.a., 10-15% of a typical user's electricity bill, in which case the amount per customer is liable to be significantly more.[97]

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[92] *The Targeted Charging Review: minded to decision and draft impact assessment* Ofgem November 2018.
[93] These 'residual' charges are currently recovered from smaller users, such as households and small businesses, via per-unit consumption charges and from larger users by a mix of per-unit consumption charges and peak demand charges for transmission.
[94] BEIS and Ofgem have adopted a principle that users of the network should pay their fair share of the costs of the energy system. This corresponds to a principle articulated by the Secretary of State, Greg Clarke, in November 2018 that there should be no 'free riders'.
[95] *Targeted charging review: decision and impact assessment* November 2019 Ofgem.
[96] *Targeted charging review: decision and impact assessment* November 2019 Ofgem p.70.
[97] *Targeted charging review: decision and impact assessment* November 2019 Ofgem p.31.

3. Ofgem acknowledged that this policy would increase bills for households that use least electricity. [98] As pointed out in paragraph 11 and Annexe 1 above these tend to be low-income households. Indeed, a paper published by Grid Edge Policy[99] had highlighted that consumers who use less than the average amount of electricity (low-income households) would pay more while those on high incomes would pay less, in some cases significantly less.

   However, Ofgem disingenuously attempted to argue that recovering residual charges through a fixed charge would not in general adversely affect vulnerable consumers as these were found at all levels of consumption[100]. While it is true that even the highest consuming households are liable to include some vulnerable consumers there will undoubtedly be fewer than among those who consume less given the very clear link between levels of consumption and income (see Annexe 1) and the fact that income is a key determinant of vulnerability.[101]

4. Ofgem's decision to recover residual charges through a fixed charge rather than a volume-related charge appeared highly contrived in other ways, too. For example, it asserted that "there was a strong theoretical basis for fixed charges, as they cannot be easily avoided other than by disconnecting from the grid"[102]. That is not a 'theoretical basis'.

5. Levying an increased fixed charge and reducing the unit rate will inevitably increase carbon emissions and reduce security of supply, although Ofgem did not acknowledge this or even provide any assessment of this issue[103]. This echoed its reluctance to address this issue in consultations and impact assessments for the default tariff cap and was in contravention of its principal objective to protect the interests of existing and future consumers, including their interests in the reduction of greenhouse gas emissions and in security of supply (see Annexe 2).

6. Ofgem did not correctly consider the alternative charging options in terms of a general framework of the optimal, economically efficient outcome, namely that of competition, in which prices reflect costs.[104]

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[98] "Those who use least electricity [will] see an increase in their residual charge. Those who use the most will see a decrease." (*Targeted charging review: decision and impact assessment* November 2019 Ofgem pp. 68, 71.) "We recognise that charges for some low-using consumers will be higher than they are today – around £24 for our illustrative low user, while for others they will fall further – around £40 for our high user." (Op. cit. p.73)

[99] *Understanding the Impacts of Ofgem's Targeted Charging Review* January 2019 Grid Edge Policy. The paper is co-authored by Maxine Frerk who, as Senior Partner Networks at Ofgem until 2016, was responsible for, among other things, network charging.

[100] *Targeted charging review: decision and impact assessment* November 2019 Ofgem p.10. Similarly, it said:

- "People move in and out of vulnerability over time and also move location, which makes it difficult to link network charges to vulnerability." (Op. cit. p.66.)
- "While there is some correlation between vulnerability / affluence and energy usage, there are significant numbers of vulnerable consumers across usage levels" (Op. cit. p.69).
- "If we were to adopt an option which reduced charges for those who use less electricity, this would result in an increase for those who use the most electricity, a significant number of whom will also be vulnerable." (Op. cit. p.69).

[101] See footnote 11.

[102] *Targeted charging review: decision and impact assessment* November 2019 Ofgem p.34.

[103] Ofgem merely stated "The modelling we have undertaken suggests that overall, the combined impact of the TCR changes will reduce carbon emissions compared with no reforms." (*Targeted charging review: decision and impact assessment* November 2019 Ofgem p.15.) However, it provided no evidence in this document to support this and it did not compare the effects of increasing the standing charge with the effects of increasing the unit rate.

[104] A report commissioned by Ofgem concurred: "The key economic principle behind the optimal recovery of sunk costs is… that such charges should have as an objective creating minimal changes

In a competitive outcome, prices would equal the marginal (i.e. 'forward-looking') costs but they wouldn't recover the fixed (i.e. 'residual') costs. The large, fixed costs of the electricity network mean it is a natural monopoly and the network operator (National Grid) has market power, which is why its charges are regulated.

The 'second best' solution adopted by regulators in such situations is Ramsey pricing. This minimises the distortion of consumption patterns relative to those that would occur under competition by adding mark-ups to cover the fixed costs that are inversely proportional to consumers' price elasticity of demand.

Lower income/consumption households have the highest price elasticity, as evidence presented in Annexe 6 shows, so economic efficiency calls for them to face the lowest mark-ups. This entails restricting the standing charge and recovering fixed costs largely through the usage charges.

Ofgem did refer to 'Ramsey pricing' as the guiding principle for the economically efficient recovery of the residual costs in an Annexe to its decision paper. However, it mistakenly took this to mean that residual charges should be recovered more from fixed charges than volume-related charges because the former were less price elastic than the latter.[105] (Price elasticity refers to the price sensitivity of consumers, not whether the charges can be avoided!)

To the extent that some households (and businesses) come to face higher usage charges than others this is indeed a distortion of consumption patterns but one which needs to be set against the wider efficient charging framework. Ideally Ofgem would seek to rectify this issue by other means as the charging method it is proposing is liable to produce much greater distortion.

Furthermore, some of the costs Ofgem described as 'fixed' are in fact variable in the long run. Indeed, Ofgem describes the residual charges as "for the maintenance and investment for the longer-term"[106] (whereas forward-looking charges reflect short-term circumstances). This means projected reductions in usage incentivised by higher usage charges *will* lead to lower residual costs as less investment in the network will be called for. Thus, for example, Ofgem's proposal refers to the level of micro-generation, which includes on-site and household solar generation, increasing more than ten-fold by 2040.[107] This forecast is based on assumptions of rapid decarbonisation and high decentralisation (such as might be incentivised by high usage charges).

It is also worth noting that this is National Grid's own forecast[108] and just one of four 'scenarios' they posit. In the other scenarios growth is substantially less. Indeed, the current scale of the problem of consumers having their own generation so avoiding residual costs remains small in the domestic sector.

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in behaviour relative to a set of efficient, cost-reflective charges, i.e. minimising distortions." *Distributional and Wider System Impacts of reform to Residual Charges"* November 2018 Frontier Economics/LCP p.7.

[105] *Targeted charging review: decision and impact assessment* November 2019 Ofgem Annexe 3 – Academic research and international comparisons pp. 3-4.

[106] *The Targeted Charging Review: minded to decision and draft impact assessment Annexe 1 – Targeted Charging Review (TCR) Principles* November 2018 Ofgem paragraph 1.5.

[107] *The Targeted Charging Review: minded to decision and draft impact assessment* November 2018 Ofgem paragraph 2.11.

[108] See data workbook at http://fes.nationalgrid.com/fes-document/ Table 3.6 'Community renewables' scenario.

Annexe 6: The economic rationale for regulating the standing charge

The standing charge is the element of energy bills for which there is the strongest argument for price regulation on economic efficiency[109] grounds. Ideally the prices charged for different products equal the costs of producing them. Thus, energy suppliers would recover through the standing charge the costs incurred in arranging to supply customers, while those costs that depend on the amount of energy supplied would be recouped through the unit rate.

It is clear that the standing charges suppliers levy are substantially greater than the costs of serving customers (see paragraph 35 and Annexe 3).

Suppliers' default tariff prices reflect the exploitation of their market power[110] over passive consumers[111]. Market power complicates considerations of economic efficiency as it means suppliers' revenue exceeds their costs. In these circumstances the most economically efficient outcome is achieved by Ramsey pricing, which minimises the distortion of consumption patterns relative to those that would occur if competition was effective. It involves regulating prices so that mark-ups are lower for those consumers who reduce their demand most in response to higher prices (i.e. those whose price elasticity of demand is highest).

Price elasticity of demand for energy varies according to households' income and consumption (which are closely correlated, as described in Annexe 1). It is higher for lower income/consumption households, as evidence presented below shows. This may be explained by the effect of energy spending on consumers' budgets: it forms a higher proportion of the budget of lower-income households so a variation in the price of energy will have a greater effect on their budgets and hence on how affordable energy is.

Efficiency thus calls for mark-ups to be lowest for low-income/consumption households, which entails capping the standing charge more tightly (in relation to the relevant costs) than the unit rate, if indeed the unit rate should be capped at all. It also means preventing suppliers offering lower unit rates for higher levels of consumption, which would be necessary in any case to prevent them effectively raising the standing charge by charging high rates for the first units consumed.

How households' own-price elasticity of demand for energy varies with their income level and energy consumption

Price elasticity of demand for energy is higher for lower income/consumption households, as Ofgem noted in describing analysis undertaken by BEIS of gas price elasticities:

"BEIS noted the lack of established research on differences between income groups but concluded that 'initial indications suggest that lower-income groups possess higher price

[109] Economic efficiency is achieved when nobody can be made better off without someone else being made worse off. It maximises social welfare by ensuring resources are allocated and used in the most productive manner possible.

[110] Market power is a cause of market failure, where the market mechanism alone cannot achieve economic efficiency. Another is externalities, where an activity produces benefits or costs for others. Examples are energy consumption producing carbon emissions and necessitating investment in additional generation and network capacity.

[111] The CMA's Energy Market Investigation in 2016 identified that energy suppliers had market power over inactive consumers who failed to engage in the market effectively and select suppliers offering lower prices. (*Energy Market Investigation Final report* June 2016 CMA paragraph 9.562 and paragraphs 158, 160 of the Summary.) This accounted for the then excessive level of suppliers' default tariffs and led to the price cap on these.

elasticities and are more sensitive to changes in price compared to higher income groups'."[112]

Similar results were found by the Institute for Fiscal Studies, which estimated the change in energy consumption that would have resulted from the imposition of VAT on domestic energy at 15 per cent for each income decile. The results and the implied own-price elasticities were:

TABLE 7
Own-price elasticity of demand for energy by income decile

Decile	Change in fuel consumption (%)	Implied own-price elasticity
Lowest	–9.61	–0.64
2	–9.50	–0.63
3	–8.26	–0.55
4	–6.83	–0.46
5	–4.84	–0.32
6	–4.11	–0.27
7	–3.43	–0.23
8	–1.97	–0.13
9	–0.06	–0.00
Highest	1.09	0.07
Average	–4.12	–0.27

Source: Johnson, P., McKay, S. and Smith, S. (1990), *The Distributional Consequences of Environmental Taxes*, Institute for Fiscal Studies pp. 8-16.

Another study when VAT was first introduced on domestic fuel suggested that a VAT rate of 17.5 per cent would reduce energy consumption among the poorest fifth of households by around 9.2 per cent, compared with a reduction of just 1.1 per cent among the richest fifth of households.[113]

Similarly, the price elasticity of demand for energy has been observed to decrease generally with the level of expenditure on a group of commodities including fuel, as shown in Table 8. This, too, suggests that the demand for energy of low-income households (who consume less energy than high-income households) is more price responsive.

TABLE 8
Own-price elasticity of demand for energy according to level of expenditure on energy (and other commodities)

Total expenditure*	Own-price elasticity (with standard error in parentheses)
low 5 per cent	–0.680 (0.020)
6–10 per cent	–0.641 (0.034)
11–25 per cent	–0.599 (0.027)
middle 50 per cent	–0.486 (0.026)
76–90 per cent	–0.369 (0.082)

[112] *State of the energy market report* (October 2017) Ofgem p.73. The BEIS report referred to is National Energy Efficiency Data Framework (NEED) report summary of analysis *Annexe D Gas price elasticities* (June 2016) DECC p.10. (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/532539/Annexe_D_Gas_price_elasticities.pdf)

[113] Crawford, I., Smith, S. and Webb, S. (1993), *VAT on Domestic Energy*, Institute for Fiscal Studies, Commentary no. 39.

top 10 per cent	–0.425 (0.159)
all	–0.479 (0.025)

* ‘Total expenditure’ is expenditure on food, clothing, services, fuel (household energy), alcohol, transport and other non-durables. Data are drawn from the annual British Family Expenditure Survey (FES) 1970–84.

Source: Blundell, R.W., Pashardes, P., and Weber, G. (1993), ‘What do we Learn About Consumer Demand Patterns from Micro Data?’, *The American Economic Review* vol. 83, no.3, pp. 570-97. Table 3 Part D p.582.