

Liberal Democrat Utilities Working Group: Call for Evidence – Theme: energy regulation

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.

As an academic research centre, we welcome explicit citation and sharing of this consultation response and the research cited within it. If you would like to discuss the evidence in more detail, please feel free to contact the centre or the named academics.

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Response to Liberal Democrat Utilities Policy Working Group – Call for Evidence, Theme: Energy Regulation

The Centre for Competition Policy welcomes the opportunity to provide evidence on energy regulation to the Liberal Democrat’s Utilities Policy Working Group. Before responding to specific questions we outline some general points.

First, it seems important for the Liberal Democrat’s to determine which objectives it views as the most critical to achieve. This includes considering which issues are short-term matters and which will be most important over the long-term. This is due to the second important observation that there are inevitable trade-offs between different policy objectives.

For example, it is well known that a freely operating market is likely to result in different outcomes for different participants. Some observers may not view such differences in outcomes as fair. Also, it is not entirely clear that a consumer can be simultaneously protected and empowered; for example, a protected consumer may have less incentive to engage with a market. A key related point is what is meant by ‘fair’ in this context? This phrase is popular, but very vague. While fairness was a key theme throughout CCP’s ‘Equity and Justice in Energy Markets’ project as part of the UK Energy Research Centre (UKERC) research programme, the aim of the project was to generate evidence to speak to this topic rather than determine what is fair or unfair, given the value judgements inherent in meaning of fairness, see Deller and Waddams Price (eds.) (2018).

Below we respond to specific questions where we have evidence to provide. The questions in the call to evidence appear to combine disparate issues, hence, we sometimes only respond to parts of the questions.

Responses to Specific Questions

- 1. Should Ofgem’s statutory objectives and priorities be changed? Should Ofgem be given duties to promote the achievement of Liberal Democrats targets for reducing UK greenhouse gas emissions by 75 per cent by 2030 and to net zero by 2045 at the latest?**

Parliamentary Committees and government reviews¹ have emphasised the importance of regulators being: i) assigned a clear statutory remit, ii) issued a clear steer on prioritising their duties, and iii) protected from deciding political issues². Despite these exhortations, duties have moved beyond pure economic regulation to incorporate expanded social and environment objectives. Figure 1 illustrates that since the 1986 Gas Act, there have been 20 pieces of amending legislation, 8 of which have been substantive changes to the content and presentation of the duties of the gas regulator³.

¹ For instance, the House of Lords Select Committee on regulators (2007) noted that “government should be careful not to offload political policy issues onto unelected regulators” (paragraph 3.13, p25)

<https://publications.parliament.uk/pa/ld200607/ldselect/ldrgltrs/189/18902.htm>; see also BIS, 2011. <https://www.gov.uk/government/publications/principles-for-economic-regulation>

² Deller, D. and Waddams Price. C (eds.) (2018)

³ See Deller, D. and Waddams Price. C (eds.) (2018). The relevant research was undertaken by Prof. Michael Harker and Dr. David Reader. The latest version of this diagram, plus companion diagrams for the water and telecoms sectors, is contained in National Infrastructure Commission, ‘Technical annex: Duties diagrams for water, energy and telecoms – Centre for Competition Policy’, Regulation Study, available at:

A greater number and complexity of duties raises the potential for conflicts between duties and creates ambiguities around how regulators should prioritise them. Greater use of cost-benefit analysis would be useful in identifying trade-offs implicit in government policies, as suggested by Ennis et al. (forthcoming). The lack of clarity both gives the regulators themselves considerable responsibility and freedom for balancing different objectives, and leaves them open to public and political interference by those who disagree with the balance chosen. These ambiguities increase the need for government-regulator communication, which can provide more opportunity for government to pressure the regulator, undermining regulatory independence. CCP research⁴ with interviewees in the regulatory community noted that the proliferation of duties had made it more difficult to pursue any one of them successfully.

For effective policy design and implementation it is valuable for government to be explicit in how different objectives should be prioritised given trade-offs between them. However, based on past and current behaviour by governments, the reluctance of government to take on the burden of hard policy choices, or provide greater clarity when there are conflicts in policy aims, could further obfuscate the defined role of the regulator. For instance, trying to simultaneously tackle social justice issues (such as fuel poverty) with environmental concerns (increasing reliance on renewables) can be difficult if encouraging renewable energy raises bills.

There is a rational case for drawing on the 2007 Lords report into economic regulators⁵ and the 2011 BIS 'Principles for Economic Regulation'⁶ and consider undertaking a wide ranging 'simplification' of regulators' duties. This could produce numerous benefits, including:

- (a) reducing potential conflicts between duties and thereby alleviating the need for potentially arbitrary value judgements when trading-off duties;
- (b) greater consistency and predictability in the decision-making process to the benefit of market participants and potential investors;
- (c) reducing the risk of regulatory effectiveness being diluted by the pursuit of "too many" duties;⁷
- (d) renewing and reinforcing the status of competition as a driver of consumer benefits;
- (e) greater uniformity between regulatory assessments, allowing for more effective cooperation between regulators in different sectors, and
- (f) an opportunity to recast the duties so they are more representative of the modern day challenges faced by consumers and markets.

<https://www.nic.org.uk/publications/technical-annex-duties-diagrams-for-water-energy-and-telecoms-centre-for-competition-policy/>

⁴ Deller, D. and Waddams Price. C (eds.) (2018)

⁵ See House of Lords: Select Committee on Regulators, 2007. UK Economic Regulators, Volume I: Report, 1st Report of Session 200607, HL Paper 189-I, available at: <https://publications.parliament.uk/pa/ld200607/ldselect/ldrgltrs/189/189i.pdf>

⁶ Department of Business, Innovation and Skills (BIS), 2011. Principles for Economic Regulation, April 2011, London, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/31623/11-795-principlesfor-economic-regulation.pdf

⁷ This was a prevailing view among interviewees, who suggested that the proliferation of regulatory objectives had made it more difficult to pursue any one of them successfully.

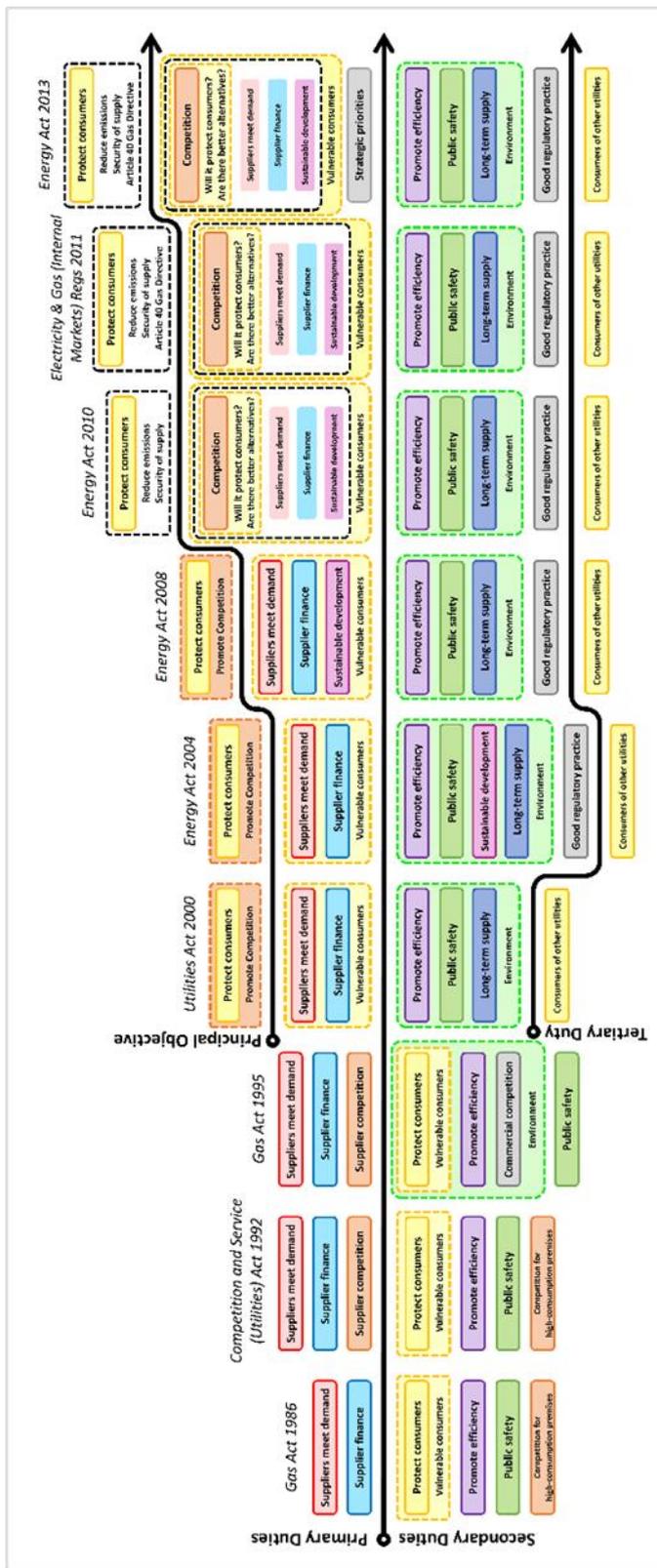


Figure 1: The Evolution of the GB energy regulator’s general duties in respect of gas

- How should energy regulation address the “consumer detriment” issues identified above? Are there any others? For example, should all energy companies be required to have sufficient reserves to meet their liabilities in the

event of failure, rather than having those costs met by all consumers through their bills?

The CMA's consumer detriment calculations:

We discuss the role that competition and regulation may (or may not) play in addressing the 'consumer detriment' issues related to price discrimination and fuel poverty/vulnerability identified in the consultation document in our responses to questions 4 and 5. Like many other organisations, the consultation document cites the CMA's figure of "customers were overpaying by around £1.4bn a year for energy". Here, we explain why this figure should be treated with some caution.

In its Energy Market investigation, the CMA considered all of the difference in price between Default Tariffs (DT) and the competitive benchmark to be a potential welfare gain and therefore consumer detriment for those on DTs. This seems questionable: in a market requiring individual consumers to engage, some of the difference in price will be offset by the costs of engagement by those consumers who do not currently do so. Such costs relate to the time and cognitive effort required to identify the best deal for the individual consumer (search costs) and then the time (and possible payment of exit fees) to complete the switch (switching costs). That relatively few individuals switch suppliers in the energy market can be interpreted as showing through 'revealed preference' that there are substantial costs to switching and that in many cases these costs are greater than the expected savings quoted to consumers. While potential remedies may reduce search and switching costs, the true welfare gain to consumers of a higher switching rate nevertheless should be calculated net of any remaining search and switching costs involved.

Also, if all consumers were 'engaged' it is not automatic that all firms would charge prices equivalent to the 'competitive benchmark price'.⁸ Indeed, if all consumers were engaged (which is very unlikely), the 'competitive benchmark price' could adjust upwards, although it is likely to remain substantially below the DT level.

Both points illustrate the need to establish a realistic counterfactual when attempting to assess the magnitude of consumer harm.

The importance of correctly identifying the costs of consumer engagement is highlighted by an FCA consultation paper outlining proposed measures to increase consumer engagement in the general insurance market.⁹ In the FCA's cost benefit analysis of proposed measures to increase consumer engagement at renewal, the cost to consumers of engaging with the market and the cost to firms of handling calls from consumers enquiring about different deals/switching, are explicitly estimated. In welfare terms, if consumer welfare and profits are given equal weight, the FCA's cost benefit analysis showed their proposed intervention to have a negative NPV according to the quantified costs and benefits.¹⁰

⁸ Paragraph 58, page 14, Competition and Markets Authority (2016), 'Energy market investigation: Summary of provisional decision on remedies', 10 March 2016, available at: https://assets.publishing.service.gov.uk/media/56e1974ae5274a036b000018/Energy_PDR_Summary_March_2016.pdf

⁹ FCA (2015)

¹⁰ This is because any increase in consumer welfare from reduced prices, conditional on the quantity consumed remaining fixed, is simply a transfer from firms' profits. For consumer engagement interventions to deliver an increase in total welfare, lower equilibrium prices resulting from higher consumer engagement must increase the quantity consumed.

Stephen Littlechild provides an even stronger critique of £1.4bn consumer detriment figure, focused on the CMA's conclusion that the large incumbent suppliers (the 'Big-6') were inefficient. Littlechild takes issue with the finding of consumer detriment despite the incumbent suppliers' having relatively low profitability.

4. How can we address the issue of price discrimination (which typically impacts more disadvantaged groups) and retain the dynamic benefits of competition? What policy, if any, should replace the default tariff price cap? Should we support the allocation of fixed costs across all consumers, as recommended by the Cost of Energy Review?

Price discrimination¹¹ and competition:

Over the past thirty years the de-regulation process and various public sector reforms have increased the role of markets and choice. This has been viewed as a mechanism for enabling competition, leading to lower prices, higher quality products/services, and allowing consumers to access products/services more closely matching their needs. However, for such a framework to be effective for consumers, consumers need to be able and willing to engage. As the retail energy market shows, price discrimination can occur according to engagement level, e.g. the 'disengaged' are charged a higher price as they do not leave their current firm when their price is increased. If engagement/behavioural biases have an association with characteristics such as education and/or income, price discrimination according to engagement may represent an uncomfortable distributional issue. If it is more 'vulnerable' or lower income consumers who end up with the higher prices across a range of markets, there may be enhanced political/policy concern.¹²

The crucial difference between 'active' and 'inactive' consumers is that their switching behaviour reveals that they have different price sensitivities (elasticities of demand). As firms are able to identify these two groups (from consumers' own behaviour) and consumers cannot resell services, firms have a natural incentive to price discriminate and raise profits. The occurrence of price discrimination does not necessarily mean inactive consumers are subsidising low prices for active consumers. Neither does it necessarily indicate a 'failure' of a market: identifying differences in different groups' willingness to pay is an inherent aspect of a market's operation.

However, policymakers should be aware of the potential negative effects of limiting price discrimination in terms of limiting competition and that it is possible such interventions may raise the prices of currently engaged consumers. Hence, interventions to limit price discrimination can create 'losers' as well as 'winners'. However, depending on the detailed

However, in the energy sector one would expect switching to lower priced tariffs to lead to an increase in the quantity of energy consumed. While this increase in quantity should lead to increased welfare in a narrow sense, it is likely to be in tension with environmental objectives.

¹¹ By price discrimination we mean cases where different prices are charged to different consumers, where the difference in price does not correspond to a difference in cost. In other words, prices are set so that firms achieve different profit margins from different consumers.

¹² How the public views these price differences may depend on whether or not the price differences exceed the potentially higher costs of serving 'vulnerable' groups. A general theme in utility regulation has been the ending of cross-subsidies between different groups of consumers to achieve greater efficiency.

competitive structure of a market it is possible for prices to be higher for all consumers after price discrimination ends. For example, Hviid and Waddams Price (2012) discuss the negative competitive consequences of imposing regional non-discrimination clauses in the domestic energy market and Waddams Price and Zhu (2016b) show that competition was indeed softened by these non-discrimination clauses. Also, since monetary savings¹³, i.e. price differentials, are a key motivation for engagement and switching in a market, a drop in engagement and switching following limitations on price discrimination would be expected (all else equal), which in turn may reduce competitive pressure and raise prices for all consumers. Even disclosure of price discrimination can have undesirable effects in certain circumstances, as noted by Ennis and Lam (forthcoming).

If a decision is made to limit price discrimination (which we would generally not recommend); it will depend heavily on judgements regarding distributional concerns and so is more appropriate for political decision makers than unelected regulators. The introduction of the default tariff cap in the domestic energy market through primary legislation rather than a regulatory rule change is an appropriate example of such responsibility. In this setting, a relevant role for regulators is to provide evidence on the size of price differentials, identify who receives the 'high' and 'low' prices, detail the likely consequences of restricting price discrimination, and to implement the decisions of legislators. In the energy market, Ofgem has repeatedly taken the view that interventions which stand to 'have significant distributional effects' are a matter for Parliament and not the regulator¹⁴.

Replacements for the Default Tariff Price Cap:

When Parliament legislated to introduce the DT price cap it did so because it judged that the price differentials between engaged and non-engaged consumers were too high to be tolerated.¹⁵ The CMA's Energy Market Investigation concluded that the main issue leading to differential pricing between FTTs and SVTs was the unilateral market power which firms obtained through the weak customer response of around two-thirds of consumers.¹⁶ Hence, when deciding whether the DT cap should be ended/replaced, the key question is what has changed in comparison to point at which the cap was imposed? In particular, has consumer engagement increased by a large enough magnitude to resolve the issues identified by the CMA? It is not clear that this problem of consumer disengagement will be solved by the end of 2023. While we strongly support the principle of regularly reviewing the cap, as a means to limit any negative outcomes, one cannot say with certainty when, if ever, the issues identified

¹³ CCP research consistently finds monetary savings to be a key driver of switching in the domestic energy market, see: (i) Deller et al (forthcoming); (ii) Waddams Price and Zhu (2016); and (iii) Flores and Waddams Price (2018)

¹⁴ For example, see oral evidence delivered by Ofgem Chief Executive Dermot Nolan to the BEIS Committee; Business, Energy and Industrial Strategy Committee, Oral evidence: Energy price caps, HC 470, Tuesday 17 October 2017, Q74, available at: <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/business-energy-and-industrial-strategy-committee/energy-price-caps/oral/71540.pdf>

¹⁵ For detailed views on the DT price cap legislation by CCP members, see Deller, D., E. Errington, A. Fletcher, M. Hviid, D. Reader and C. Waddams (2017), CCP response to the Business, Energy and Industrial Strategy Committee, 'Pre-legislative scrutiny of the draft Domestic Gas and Electricity (Tariff Cap) Bill inquiry', available at: <http://competitionpolicy.ac.uk/documents/8158338/16525214/6+CCP+response+to+BEIS+Committee+Energy+Price+Cap+Inquiry.pdf/236d419d-d157-2e0e-2eea-0923d75dd035>

¹⁶ See paragraph 154, pg 37, Competition and Markets Authority (2016)

by the CMA will be fully resolved.¹⁷ Overall, our assessment is that package of measures resulting from the CMA energy market investigation will increase consumer engagement (including switching), but the improvement is likely to be insufficient to address the political pressures surrounding this market. Hence, it is necessary to consider alternative options following on from the price cap to manage price differentials after 2023, unless price differentials are no longer viewed as a concern.

A) Extend the Duration of the Existing Price Cap

A price cap overrides the market process, and is a substitute rather than a complement for effective competition around DTs. The tighter (lower) the cap, the less freedom there is for firms to set prices, and the greater the potential for unintended consequences.

Once the decision to intervene has been taken, the cost of supplying default tariff customers in the absence of market power needs to be determined. This is the central challenge when determining any tariff cap. By their nature, regulators know less about firms' cost of supply than suppliers themselves, and firms have an incentive to report costs in a way that results in lighter regulation. This means there is always some uncertainty about where the efficient cost of supply lies: the tighter a cap is set, the greater the risk that it is set too low; including 'head room' in the cap's design increases the safety margin, but reduces the level of protection for consumers. This inherent weakness of price caps forms the basis of why alternative arrangements that structure competition in particular ways may be attractive.

B) Opt-Out Collective Switches

The possibility of running an opt-out collective switch is discussed in detail by Deller et al. (2017). The ability for firms to charge a higher price for DT customers is the result of unilateral market power over this section of the market. Consumers' disengagement means there is a lack of competitive pressure on the prices they face and the collective switch process is explicitly designed to create such competitive pressure. The collective switch would be open to all consumers who had been on a DT for a given number of years, and all eligible consumers would be enrolled in the collective switch unless they took a positive step to opt-out.¹⁸ As explained by Deller et al. (2017), requiring households to opt-in is not robust to non-engagement: those who do not switch supplier are also relatively unlikely to take the positive step of opting-in to a collective switch. While Ofgem's recent randomised control trials of opt-in collective switches lead to impressive increases in switching, compared to control groups a high percentage of consumers still do not switch.¹⁹

The collective switch would take the form of a reverse (falling price) auction, where firms compete to offer the lowest cost of supply, subject to minimum quality requirements. All firms would be allowed to enter the auction and consumers would be split into tranches, of perhaps 10,000 consumers, that would be sufficiently small to attract bids from new entrants. The

¹⁷ Of course, non-switching is not automatically a problem, for example, if a consumer actively prefers their current supplier over rivals.

¹⁸ Allowing an opt-out is important as some consumers positively value their current supplier over certain rivals on specific dimensions and may actively choose to remain with a supplier which does not offer the lowest price. See Deller et al. (forthcoming).

¹⁹ Evidence on the performance of opt-in collective schemes is provided on pg 7-17, Deller et al. (2017)

auction process would begin at a high price, which would attract both low cost and high cost suppliers. The price would fall in successive rounds, resulting in high cost suppliers successively reducing the number of tranches they would supply, and, eventually withdrawing from the auction altogether. The auction would stop when the number of tranches which firms were willing to supply in aggregate had fallen to equal the number of tranches on offer.²⁰ This competition for, rather than in, the market should lead to prices being closer to the competitive level. Since an opt-out collective switch replaces consumer engagement rather than encouraging consumers to become more engaged, it would need to be repeated at regular intervals.

While an opt-out collective switch has attractive properties from a competition perspective, Deller et al. (2017) note that the scale of the change presents challenges. In particular, there would be the potential operational challenge of switching millions of consumers' retail supply contracts in a short space of time. Also, the legality of deemed consent via an opt-out faces some uncertainties under current arrangements.²¹ These issues mean that opt-out collective switches will require time and careful planning to implement.

Furthermore, some consumers may dislike being involuntarily switched, even if they have the potential to opt out. Moreover, just as for a price cap, a collective switch may have distributional implications; suppliers might alter how they distribute fixed costs across consumers possibly generating detrimental consequences for customers who are 'engaged' or opt-out of the collective switch.

As Deller et al (2017) highlight²², opt-out collective switches (termed 'municipal aggregation') that have been applied in the US for energy have received local democratic approval. This suggests successful implementation of opt-out collective switching is likely to require legislative backing.

C) A Price Cap Linked to Rival Firms' Tariffs

Another option is for the DT cap to be set with reference to the fixed-term tariff (FTT) prices charged by all other firms in the market. FTTs are the tariffs between which engaged consumers switch. Even with the DT price cap in place, the process for setting FTT prices is considered fairly competitive due to a large number of suppliers competing for engaged customers.

In this arrangement, the SVT cap for firm A would be set with reference to the average FTT price after excluding firm A's FTT price from the average, while the DT cap for firm B would be set with reference to the average FTT price after excluding firm B's FTT price etc. This process would mean that every firm charging a DT would have a slightly different tariff cap. Excluding a firm's own FTT price from calculating its DT cap is critical to ensuring the cap cannot be manipulated by the firm's own actions. Importantly for the functioning of FTT competition, this way of calculating the average FTT price ensures all firms retain an incentive to undercut other firms' FTT prices. If the average included a firm's own FTT price,

²⁰ This auction mechanism has been used in New Jersey to determine the wholesale component of consumers' energy bills and is discussed in detail by Loxley and Salant (2004).

²¹ The operational challenges are discussed on pg 38-42 of Deller et al. (2017), while the legal uncertainties are discussed in Appendix B, pg 73-79.

²² See pg 17-23.

sophisticated firms would anticipate that all firms would have an incentive to raise their FTT price and so the cap could encourage co-ordinated price rises.

For all three options A), B) and C), the extent to which DT prices can be constrained without increasing FTT prices depends on the extent to which relatively high SVT prices result in abnormal profits/allow excess inefficiency. The CMA concluded that there was in fact significant abnormal profits/excess inefficiency. An alternative argument, put forward by Stephen Littlechild²³, is that the Big-6 were not making abnormal profits, nor were they inefficient, but that the higher SVT prices are required to cover fixed costs.

[Potentially add something about how the market's evolution since the introduction of the DT cap tells us something about whether we should be concerned about this point or not.]

5. What combination of regulation and Government spending policies (funded from taxation) should be used to assist households suffering from fuel poverty and/or improve the energy efficiency of dwellings?

If policymakers wish to reduce carbon emissions, the easiest way to achieve this is to ensure a high price for forms of energy that involve high carbon emissions. If there are concerns about particular groups of householders being unable to afford these prices, the best way to deal with this, and one which preserves energy conservation incentives, is to provide these householders with increased resources (i.e. income transfers).

When considering the economics of fuel poverty, the critical question is why fuel poverty should be treated as a distinct problem from general poverty? Why is an energy specific intervention appropriate rather than an intervention that raises a household's income? A standard result from economic theory is that an income transfer will make a consumer at least as well off, and potentially better off, than the provision of a particular good of an equivalent value. While a household may be unable to afford energy, they may value additional food more than additional energy.

One economic rationale for fuel poverty specific policies is that they might be more cost effective than income transfers: a one-off investment to improve energy efficiency may cost less than providing an income transfer every year. Hence, fuel poverty interventions need robust cost-benefit analysis to demonstrate that they are more appropriate than alternative policy options. Indeed, evidence in Deller and Waddams (eds.) (2018) indicates that relatively few households identified as fuel poor during the period 2001-02 to 2008-09 remained fuel poor in multiple time periods. On the face of it, this evidence reduces the case for 'permanent' interventions such as energy efficiency installations, compared to monetary transfers, in addressing fuel poverty.²⁴

Also, if it is decided to retain an emphasis on the promotion of energy efficiency measures, it is important to distinguish between regulation of the energy market and regulation in other areas. Ofgem primary expertise and role concerns the energy market, responsibility for regulations relating to the energy efficiency of housing and household appliances seem better placed with other bodies.

²³ See second paragraph, second column, pg 10 of Littlechild (2017).

²⁴ See Figures 6 and 7, pgs 68 and 69. The results are based on data from the British Household Panel Survey rather than the official fuel poverty statistics.

When delivering distributional objectives, it is questionable to leave the selection and identification of households to receive support to private firms or unelected regulators. Distributional concerns involve explicit value judgements and it is appropriate for these judgements to be taken by democratically elected governments as part of wider debates about the extent to which incomes should be redistributed. Also, the best information on low income and 'vulnerable' households is likely to be that in taxation and benefits records. Requiring energy firms to create their own inferior records of 'vulnerable' consumers seems to be an unnecessary duplication of costs.

6. How can the regulation of monopoly networks be reformed to give energy consumers a fairer deal?

CCP has conducted analysis looking at the distributional implications of distribution network tariffs for the European Consumer Organisation, BEUC.²⁵ Lu and Waddams Price (2019) review the main types of tariff structure used to recover electricity distribution costs, and simulate the effect of each of the tariff structures on different residential households. They identify potential tension between low carbon incentive schemes such as net metering and feed-in tariffs and distributional effects. In particular, reduced bills for households with self-generation may imply higher costs paid by other consumers, particularly when the tariff is mainly volume-based. When the tariff becomes more nuanced and cost-reflective, such as through a capacity component or a ToU element, then any cost reduction from self-generation depends crucially on how peak demand is affected by self-generation.

Three practical issues affect the 'fairness' of tariff reform. The first is that not all consumers are in a position to respond to the incentives offered because of the initial distribution of wealth and opportunities. Such inequality in opportunity is often related to financial and tenancy limitations: consequences in the energy market may be rooted in causes which lie beyond it, as do the best instruments to reduce such barriers. It is important to understand what barriers to participation exist, and to address these in an equitable manner.

The second issue is that environmentally friendly tariffs cannot incentivise the desired change if consumers do not understand them. Even the most active consumers need to have confidence in clear signals about how their decisions affect monetary rewards, and be able to take action accordingly.

The third issue, related to the first two, is the speed of change, both to enable those consumers who are in a position to do so to respond to the new incentives, and to enable appropriate protection for those who cannot react and may suffer adverse consequences. The challenge is not just how to redesign distribution tariffs so that they incorporate and incentivise the wider changes to the electricity system, but how to estimate the associated aggregate and distributional impacts on different consumer groups and confront any adverse consequence, especially for vulnerable consumers. This may suggest a gradual and smooth transition, even if it delays adaption to changes and benefits for the overall system.

If distributional issues are the main concern, one alternative way to recover residual costs is to use increasing block tariffs, where most costs are recovered from high volume users, who

²⁵ See Lu and Waddams Price (2018).

may be more able to bear these additional costs. However, such a pricing system has practical difficulties²⁶

9. How should energy regulation promote innovation in new energy service models that enable consumers to engage with the net-zero transition?

Regulation and policy are currently built around the ‘supplier hub’ model, however, new energy service models may disrupt this model. Small adjustments to existing regulations may, therefore, be insufficient in the future. Tinkering with derogations, geographic licences, supply licence exemptions, limits on universal service obligations, other licences alongside supply licences may be sensible ways of achieving particular (fairly limited) objectives. A more useful approach moving forward would be to analyse more explicitly which objectives can be furthered by competitive markets, and which would require different instruments.

Much of the discussion provided here suggests that competition and market structure may not be the central obstacle to consumers altering their energy demand. A more fundamental issue is how to communicate data held by suppliers to consumers in a manner that encourages efficient energy usage. A key area of research is how this communication can be performed in a manner that a sizeable proportion of the population will engage with. Work from CCP members highlights that using consumption information to enable social comparisons has been a successful tool in field study settings (Brock, 2015; Brock and Borzino, 2020).

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²⁶ The practical challenges of increasing block tariffs, in particular their design and consumer responses, are discussed in depth, albeit in the context of residential water consumption, in Lu et al. (2019).

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