Ofgem's call for evidence: consumer impacts of market wide settlement reform

Citizens Advice submission
March 2019

citizens advice

About Citizens Advice

The Citizens Advice service provides free, independent, confidential and impartial advice to everyone on their rights and responsibilities. It values diversity, promotes equality and challenges discrimination. Since 1 April 2014, the Citizens Advice service took on the powers of Consumer Futures to become the statutory representative for energy consumers across Great Britain. The service aims:

- To provide the advice people need for the problems they face.
- To improve the policies and practices that affect people's lives.

The Citizens Advice service is a network of nearly 300 independent advice centres that provide free, impartial advice from more than 2,900 locations in England and Wales, including GPs' surgeries, hospitals, community centres, county courts and magistrates courts, and mobile services both in rural areas and to serve particular dispersed groups.

In 2017, Citizens Advice Service helped fix 163,000 energy problems through our local network and 61,000 through our Consumer Service Helpline. Our Extra Help Unit specialist case handling unit resolved 8,367 cases on behalf of consumers in vulnerable circumstances, and their Ask the Adviser telephone service handled 2,593 calls from other advice providers in need of specialist energy advice.

Since April 2012 we have also operated the Citizens Advice Consumer Service, formerly run as Consumer Direct by the Office for Fair Trading (OFT). This telephone helpline covers Great Britain and provides free, confidential and impartial advice on all consumer issues.

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Summary

Citizens Advice welcomes Ofgem's timely call for evidence to consider the consumer impacts of market wide settlement reform.

This reform is an important enabler of demand side response (DSR) and as such presents a range of opportunities for the energy industry, consumers and the country. If delivered well, DSR can result in mutual benefits; individual consumers may be able to save or earn money through being responsive to signals such as price, while the energy system can avoid building unnecessary generation and network assets.

However, DSR also presents several risks. It is possible DSR may leave some consumers behind, picking up a higher bill because they are less able to change when or how they use electricity. These consumers may need further protection or assistance to ensure they still pay a fair, affordable price for their use.

It's likely companies active in the energy market will offer different technical and contractual approaches to DSR as they attempt to address constraints at a local or national level, at short notice as well as for a range of durations and frequencies. Consumers have already experienced both static[1] and dynamic time of use tariffs and there have been trials for vehicle to grid, other forms of time varying tariffs and heat as a service, to name but a few. Regardless of how people choose to engage with DSR, Citizens Advice considers it essential that there are strong consumer protections, and and that people are treated fairly.

Based on our experiences of consumers and the energy retail market[2], Citizens Advice has set out the following principles which future flexibility offers should adhere to. These are:

- Flexibility offers must be **fair** and **inclusive** for consumers
- Consumers should be given the **choice** to participate and should **save or earn** money, ensuring the value of flexibility is given back to consumers
- There must be **clear, transparent** information and **fair** terms and conditions
- **Information, services and tools** are provided to help consumers **decide** the suitability of different models. Service providers are responsible for recommending appropriate products, and should regularly reassess this. Consumers should have the freedom to **move easily** between or leave contracts if their circumstances change.
- There should be sufficient **interoperability** to ensure consumers can use technologies with multiple service offers.
- Consumers should retain a level of **control**[3] they feel comfortable with, if there is increasing automation.

[1] Economy 7, Economy 10 etc.
[2] including the extensive research and analysis we have done
[3] We describe some elements of control necessary in subsequent sections

- Service providers must respect consumer rights to **data privacy, transparency and control**
- There are appropriate **consumer protections**, including protection from bill shocks and damage to flexibility assets[4]
- There is clear **dispute resolution** routes and **single** point of contacts
- Those who don't participate in DSR should **not be charged beyond** what is **cost-reflective** and people who struggle to pay their bills should be appropriately supported.

Ofgem's Innovation Link provides a safe space for organisations that are looking to introduce new market models. We welcome the use of this space as an opportunity to also reflect on how best to protect consumers, especially in the interim period while the market continues to develop.

Many of the potential models offered to consumers will require access to a significant amount of personal consumer data. This could range from energy use on a half hourly basis to energy use at a device level and the efficiency of that use. To offer consumers confidence in this market, there need to be adequate governance processes for data and a robust data and access privacy framework, which reflects the complexity of data that is collected. It is Citizens Advice's view that privacy should be built into technologies and services by design, only collecting data where there is a clear user need and allowing customers to understand how automated decisions have been made. Principles of transparency and control for consumers should be at the heart of any policy developments in this area.

In this response we mainly focus on one element of DSR: the flexibility of demand. However, it is important to acknowledge other forms of DSR, particularly demand reduction through energy efficiency measures. Low income consumers face particular barriers in accessing these measures to improve the efficiency of their homes, and in particular those living in rural areas who are poorly targeted through current support mechanisms[5].

There is no significant evidence to suggest particular groups of consumers in vulnerable circumstances are negatively affected by DSR in aggregate. However, where individuals within these groups are negatively affected, the effects may be more severe. Ofgem should be conscious of the risk to consumers in vulnerable circumstances and monitor the market carefully, acting where necessary to protect these consumers.

Citizens Advice warmly welcomes the additional focus on microbusiness consumers in this call for evidence. While many behaviours of microbusiness consumers are likely similar to domestic consumers, there could be distinct barriers and risks of DSR for this segment of the market. Our review of the evidence indicates a relative gap in identifying these barriers and risks as well as the distributional effect of DSR. If this call for evidence

[4] For example to batteries, if they are inappropriately and continuously cycled
[5] Beyond ECO: the future of fuel poverty, Citizens Advice, 2018

does not identify such research, we would encourage Ofgem to carry out further work in this area to better understand the impact on these consumers.

Finally, the impact of future flexibility markets is uncertain as of yet. The predicted rate of electric vehicle uptake varies substantially and policy decisions are still yet to be made on the best approach to decarbonising heat. Additionally, the ongoing Access and Forward-Looking Charges Significant Code Review will affect the way that domestic and other small users will interact with the electricity networks. These factors all play a role in the DSR requirements placed on consumers and the adjustments required. Ofgem should be vigilant about consumer outcomes, and consider how it can best monitor these, especially as market models and uptake levels evolve.

We are happy to discuss any issues raised in this response in more detail and we look forward to engaging regularly with Ofgem as the market develops.

Our view

Specific information and forms of communication that help consumers engage with DSR

Since 2012 Citizens Advice[6] has been concerned about the information people on legacy time of use tariffs[7] receive. At that time, we found 12% of consumers felt uncertain over their off peak tariff times and 23% wanted more information about this. Last year, we considered the consumer experiences of these tariffs[8] once more. Our findings show 26% of consumers didn't feel confident about their off peak times - more than double the 2012 figure.

'I'm not quite sure what the Economy 7 comes in at, I presume it says Economy 7 I'm just assuming that it is actually 7.00pm at night to 7.00am in the morning.'
Clive[9], 55-64, Eastern England, Economy 7 customer

Knowing when it is cheapest to use energy is fundamental to engaging with this form of DSR meaningfully. Better information and support is needed for consumers and this should be delivered at relevant consumer touchpoints, more regularly[10].

[6] And its predecessor body, Consumer Futures
[7] From devotees to disengaged, 2012, Consumer Futures
[8] False Economy, 2018, Citizens Advice
[9] This is a false name, used for the purpose of anonymisation
[10] Since publication, we have written to energy suppliers asking them how they intend to implement Ofgem's domestic supplier-customer communications rulebook reforms for their legacy time of use customers, specifically. We find some new platforms are being proposed for sharing additional assistance and advice and suppliers intend to share information to support consumers to benefit from or switch their tariff. However it is not clear how frequently consumer might receive information, at what stages in the customer journey, and details of what the

In 2012[11] we asked consumers what other types of information they'd like to receive from their energy supplier. Suggestions included:

- tailored advice on load shifting, which would guarantee cost savings
- better information to compare prices and switch more easily; and
- assessments on usage and whether the tariff was currently, or would in future benefit them.

We support Ofgem's new customer communications principles - particularly the 'encouraging and enabling engagement' principle - which should lead suppliers to providing better information, services and tools to help customers understand how to use their tariff most effectively. We also support the concept in the principle that more complex products are likely to need more sophisticated support to help consumers understand them. As these new principles are implemented we would hope to see suppliers developing innovative approaches to meeting these aims, that can support the DSR market in future.

Citizens Advice believes that smart meter usage data presents industry with an opportunity to better tailor how it might support consumers.

We understand some companies are already developing offers that provide tailored energy efficiency advice based on this data. There is potential for this model to also support consumers with advice on load shifting and could complement DSR models that require regular decision making.

As communication and information provision moves increasingly online and becomes "smart", it will be important to consider how accessible and inclusive different forms of communication are. Ofcom's recent report on Access and Inclusion[12] highlights for example that 53% of disabled people have a smartphone in their household, compared with 81% of non-disabled people, and that people who are most financially vulnerable are less likely to have all of the main communications services - landline, mobile, broadband and pay TV.

Indicative evidence[13] suggests face to face advice also leads to a greater likelihood of behaviour change. This could be done through existing consumer touchpoints such as when people buy the technology that enables them to provide DSR, such as an electric vehicle (EV), smart charger or smart appliance, or at the point of installation of said equipment.

It is essential that Ofgem and the government work together to consider how consumers who engage with DSR options can access independent, impartial advice,

information will consist of. Very few, if any, new proposals seek to improve billing information and contract change notices, in accordance with consumer characteristics and preferences.

[11] From devotees to disengaged, 2012, Consumer Futures

[12] Access and Inclusion, 2018, Ofcom

[13] The benefits of energy advice, 2014, Ofgem

information and support. Some DSR options will have a much clearer 'consumer journey' than others: for example if their DSR provider is an energy company and governed by energy market rules it may well be straightforward to resolve an issue. However, if a consumer has more than one DSR provider could become more complicated, especially if there needs to be an element of understanding how these two services might interact.

Citizens Advice is also concerned about how consumers might understand their rights if something goes wrong. For example if the consumer engages in DSR via multiple platforms, it's possible there may be multiple consumer protections and/or alternative dispute resolution schemes that could apply, and this could well prove difficult for consumers to engage with. There is the potential that there will be greater risk for consumers as markets blur and regulatory oversight is not well defined.

Behavioural economic insights also highlight the danger of information overload. People have limited cognitive ability to process information and when faced with too much information or too many choices, people tend to do nothing and make no choices[14], thereby in effect choosing the default option. To deliver more flexibility we need the right economic and regulatory incentives, and to create a choice architecture in which consumers are more likely to make the right flexibility choice for them and the energy system.

In addition, we would hope third party intermediaries develop their market offers to support consumers as they switch between different tariffs and indeed market models. This should include elements of tailored price comparison and indicative information on the suitability of different models for the consumer.

Lastly, it is likely many of the mechanisms for domestic consumers above will be relevant to microbusiness consumers too. However, there is limited research on the information provision preferences of this consumer group.

How to encourage consumers to be more confident about engaging with DSR aside from communication

Overall, the concept of flexibility services will be new to the majority of domestic and smaller non-domestic energy consumers. It comes with potentially complex terms, conditions, risks, new technology and behaviour change. Robust consumer protection will help consumers feel more confident to engage with DSR. We discuss consumer protection in more detail in subsequent sections.

Technology

Technology could make it simpler and easier to engage with DSR. Automation, when combined with a time of use tariff, is likely to result in greater DSR and cost savings for

[14] Regulatory reforms to deal with choice overload, Daiedzic, 2018

consumers[15], especially in circumstances where there is electrification of transport and heat.

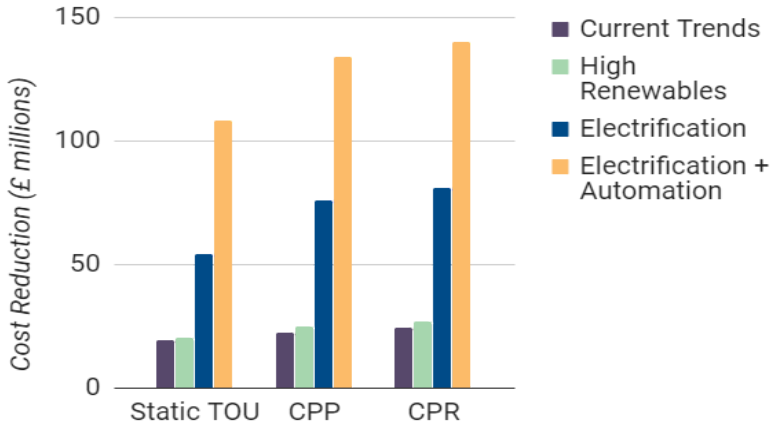

Fig 1. Predicted average cost reduction for consumers with a range of time varying tariffs, in a range of future scenarios

To encourage consumers to use technology well, industry should:

- reflect on which support mechanisms might help. For example the use of 'set up' instructions introducing DSR functionality, or 'default' settings[16] to make it easier to engage. However, any 'default' settings would need to be defined to understand the possible impact on data privacy or consumer experience. There may also need to be support as the consumer uses the technology and how they might establish controls that best reflect their needs. Research[17] suggests some consumers have been confused using automated technology and the impact it may have on their heating systems (i.e. turning on at night time). Companies should be mindful of consumer expectations and reality and how best to explain the difference.
- build accessibility, privacy and security into technologies by design. This is especially important for consumers with disabilities, who could be left behind without appropriate consideration.
- consider the balance of control and automation (this is discussed in more detail below).
- use innovative techniques, helping consumers understand what the problem is if something goes wrong and who or what is responsible (i.e. the technology or different service providers) to enable a clear path to resolution.

As markets develop, it will be important to define interoperability[18] standards between technology and service offers - this should be reflected from a whole systems point of view, considering wider implications other sectors may have, for example the

[15] The value of time of use tariffs in Great Britain, 2017, Citizens Advice
[16] EAST, 2014, Behavioural Insights Team
[17] Domestic demand side response with heat pumps: control and tariffs, Fell et al, 2016
[18] An introduction to interoperability in the energy sector, ESC, 2018

automotive sector. Ofgem should be mindful of ongoing conversations on different interoperability options in the energy market and the consumer impact and cost associated with these options.

More generally, regulators and government must work together closely to consider consumer outcomes holistically as this market develops. There is a risk that decisions taken about technology by government and industry, if not properly considered, may frustrate the actions available to regulators to protect consumers.

Third Party Intermediaries (TPIs)

The most commonly used intermediaries currently are price comparison website (PCW) [19]. They help consumers sift through the plethora of tariffs available to them and estimate likely bill changes. We recently highlighted[20] that current functionalities of PCWs are insufficient to help consumers a) find and b) make decisions about whether a smart or dynamic time of use tariff is for them. Consumers need to have access to tools that help them understand how a change in behaviour can help them save money on a certain tariff. Otherwise they will not be able to switch to a ToU tariff or flexibility service with confidence.

Another type of intermediary is a demand aggregator. They sit between non-domestic consumers and National Grid's balancing services and the Capacity Market, allowing consumers to earn money for being "flexible". It is inevitable that aggregators will seek to also operate in the domestic market when the conditions are right. Demand aggregators present an opportunity for domestic and micro business consumers to engage in DSR and capitalise on their flexibility.

Aggregators use new technology to make innovative propositions. In a market where many consumers distrust their supplier, aggregators could be a welcome party for consumers to engage with their energy supply. Consumers might also perceive the objective of suppliers: to sell them energy, and the objective of DSR: to delay or even reduce energy consumption, as contradictory and may trust an aggregator more with managing their flexibility as their objectives may be aligned. We welcome the rights consumers have been given to engage with aggregators in the recently adopted EU Electricity Directive.[21]

Consumers most positively associate with low-maintenance and familiar[22] aspects of the current supply model, meaning any change must be well explained and the benefits and implications clearly set out. The use of a TPI could simplify the amount of information and action required by consumers and we would expect TPIs to have a positive effect on consumer engagement. However, control may still important for the vast majority of

[19] Ofgem's 2018 Consumer engagement survey indicated 54% of those who switched use a PCW
[20] Take Charge, 2019, Citizens Advice
[21] EU Electricity Directive
[22] Forthcoming research by Citizens Advice involving qualitative focus groups with 100 people

consumers to reduce perceived risk factors. Specifically consumers may desire control over:

- timing - when specified actions occur;
- spending - how much they spend based on the options they select; and
- autonomy to use energy or appliances whenever they want, if they needed to.[23]

Due to the likely extent of automated technologies and decisions made by third parties, consumers may need clear and accurate estimates of the impacts of their decisions, including the parameters of automation. There should be a mechanism for regulators to effectively monitor these automate processes and intervene to protect consumers, where necessary.

Offering different routes to DSR

There are many variables affecting someone's ability to be responsive to market signals. This could include the energy efficiency of your home, the technologies available to you (e.g. battery storage, EVs, smart appliances) or your personal circumstances meaning some types of load may be less flexible.

To encourage all consumers to engage in DSR, it is essential to there are options that will work best for everyone. These options should give consumers control over how and when they are flexible, as well as which loads they want to be flexible with.

It is likely technology, use of third parties and offering a range of options to engage with DSR will also be relevant for microbusiness consumers. However, we are not aware of significant evidence to prove this to be the case. In a report from Energyst[24], 84% of the 22 businesses engaging with DSR used a demand aggregator to do so. It is important to note, however, the majority of businesses who took part in this survey had over 1000 employees and therefore those participants may not be reflective of microbusiness consumers.

Which approaches to load shifting would consumers prefer?

Time varying tariffs

In 2017, Citizens Advice commissioned UCL to complete a **literature review** of customer responses to time varying tariffs[25]. It found the uptake of time varying tariffs,

[23] Public acceptability of domestic DSR in GB : The role of automation and direct load control, 2015, Fell et. al
[24] Demand Side Response, Aligning Risk and Reward, Energyst, 2018
[25] Findings from the literature review fed into our subsequent report: The value of the time of use tariff in Great Britain. We are happy to share the full literature review with Ofgem upon request. https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/The%20Value%20of%20TOU%20Tariffs%20in%20GB%20-%20Volume%20I.pdf

both in trials and for full scale deployment, ranged from 0-96%. Table 1 (below) summarises the reason why this may be the case.

Table 1. Factors contributing to ToU tariff uptake

Factor	Key points	Strength of findings
Recruitment method (opt in vs. opt out)	Biggest driver of difference across studies. 83% average enrolment with opt out vs. 26% opt in.	High
Financial incentives (i.e. gift cards)	Statistically significant impact across studies, with 35% enrolling where there was a financial incentive and 20% enrolling where there wasn't	High
Tariff type	Static ToU tariffs had a 35% uptake, and is more popular than dynamic ToU and particularly RTP (18%). However limited data makes it difficult to compare across other tariff designs.	Moderate
Automation	Comparison against studies finds no statistically significant difference. However individual studies have considered this and found automation increases uptake, possibly to a greater extent for dynamic tariffs than static.	Moderate
Bill protection	Comparison against studies a higher uptake with bill protection (35%) than without (27%) though the difference is not statistically significant. Individual studies suggest a moderate boost due to bill protection	Moderate
Messaging	There is limited research on this issue as most studies focus on financial savings. Results, where available, are largely conflicting though suggest a modest effect from promoting environmental benefits.	Inconclusive
Type of customer	This was not analysed by any of the studies.	Inconclusive

The research found that housing status, age, and income are all related to the likelihood that a customer will enrol in a ToU tariff. Those living in socially rented accommodation, those older than 65 years, and those with a median income of £20,000-30,000 are less likely to enrol than younger or wealthier members of the population.

In 2017, Citizens Advice also conducted a **survey with 3,000 energy bill payers** to understand consumer preferences around ToU tariffs. Highlights of the findings include:

- On average, roughly one-quarter (26%) of customers indicate that they would switch to a ToU tariff. This is generally higher than the expectations of several stakeholders with whom we spoke in the context of this study
- The research did not reveal that consumers prefer any particular type of ToU tariff. This is a somewhat surprising finding, given potentially significant different value propositions that the tariffs present to customers. This finding should be explored further through alternative forms of market research (e.g. focus groups)
- Younger consumers were more likely to sign up than those older than 65
- The results hint that offering ToU tariffs could have negative implications for trust in the electricity supply industry, although this effect is small. The findings also suggest that trusted non-governmental organisations could be best placed to mitigate such concern
- Tailored messaging was effective at boosting demand for a static ToU amongst EV owners (a group that is potentially more likely to save money on ToU tariffs). Additionally, the perceived opportunity to save money on the tariff and "ease of use" both contribute to an increased likelihood of uptake. If suppliers could design and market ToU tariffs suited to the lifestyles or consumption patterns of particular consumer groups, this may provide a potential avenue for increasing uptake to ToU tariffs whilst helping consumers to beneficially switch to tariffs that will save them money

Forthcoming research

Citizens Advice has been conducting research with EV and non-EV drivers to understand what approaches to smart charging would be acceptable to households and small businesses. We tested their attitudes towards static and dynamic ToU tariffs, third party managed charging, Vehicle to Grid and managed charging through a distribution network operator. We are expecting final results of the research at the end of April and will share them with Ofgem as soon as possible.

We have also commissioned research[26] which aims to understand consumer perceptions of new market models. Early findings from this research indicates time of use tariffs appeared to be unpopular with consumers. Participants expressed concerns including safety of appliances being operated when out of the house and a loss of control over when they would be able to use electricity without being penalised through higher prices[27].

The research also indicates concepts such as peer to peer trading may be of interest to consumers, whilst there may be more difficulties in understanding (and therefore interest in) energy as a service. Again, we are happy to share the detailed findings with Ofgem, when available.

[26] Qualitative focus groups with 100 participants in total
[27] By contrast,16 field trials explored consumer satisfaction with time varying tariffs and found 70-90% of participants felt satisfied with their experience of the tariff. This suggests that acceptance of time varying tariffs could grow as experience or familiarity does.

For microbusiness consumers, we are unaware of extensive research in this area. A report from Energyst[28], suggests current DSR preferences include load response and onsite generation (for use and export).

What percentage of customers will be price responsive / what volume of load shifting will consumers be able to offer?

In trying to understand how much load consumers may be able to shift when given a signal to do so, Citizens Advice recommends Ofgem is mindful of the diversity of households and microbusinesses, and the multitudes of variables that determine ability to offer a flexibility response. Different consumers will have very different flexibility capital which will depend on factors both in and outside their control. Offers made to consumers must bear this complexity in mind.

The Citizens Advice/UCL literature review strongly suggested domestic consumers are responsive to signals such as price. Trials in GB and Ireland are at the mid- to lower-end of the range and have typically included up to 10% average peak demand reduction across tariff offerings. However, price responsiveness varies significantly across field trials and is influenced by factors such as price, appliance mix, messaging and study design.

The literature review found there is some evidence that automation can roughly double price responsiveness, however the studies considered under the literature review with a technology aspect were conducted in summer peaking regions mostly with smart thermostats for air conditioning. As such, the applicability to the UK may be limited.

Studies suggest that price responsiveness from lower income households appear to be similar or slightly less than the average consumer. At the time of the literature review, there was not enough data to suggest how other consumers in vulnerable situations may be impacted. Our subsequent report on the value of the time of use tariff in Great Britain[29] show different vulnerabilities can help or hinder people using time of use tariffs.

For microbusiness consumers, there is far less evidence on DSR, both in terms of load shifting and price responsiveness. A report from Energyst[30] suggests half of non-domestic consumers were able to shift 25% or more of their load, however 48% stated they could shift more of their load but don't. This is echoed by other research, which suggests peak reduction is 25% for non-domestic customers[31].

[28] Demand Side Response, Aligning Risk and Reward, Energyst, 2018
[29] The value of time of use tariffs in Great Britain, 2017, Citizens Advice
[30] Demand Side Response, Aligning Risk and Reward, Energyst, 2018 (note: small sample size)
[31] Demand response from the non-domestic sector: early UK experiences and future opportunities, Torriti et al, 2013

What are the risks and benefits of different approaches and which groups are likely to be winners/losers?

In table 2, we have identified some of the benefits and risks[32], to consumers of potential DSR approaches. The table lists the types of households that could 'win' or 'lose' from the approach but a more detailed explanation of potential 'losers' have been captured in subsequent sections that look at barriers to engagement or shifting load.

Table 2. Comparison of different DSR approaches

Approach	Benefits	Risks	Winners	Losers
Time of use tariff - Critical Peak Pricing	Does not require as much demand shifting as compared to dynamic tariffs	Risk of exposure to high prices	Those who are able to respond to price signals quickly and easily	Please see the list laid out in the subsequent section: "What are the barriers for consumers in shifting their load/responding to price?"
Time of use tariff - Critical Peak Rebate	Does not require as much demand shifting as compared to dynamic tariffs Consumer cannot lose money	n/a	Those who are able to respond to price signals quickly and easily	
Time of use tariff - Real Time Pricing / dynamic	Possibility of cheaper pricing	Uncertainty over pricing, possible shock charges	Those who can automate energy use	
Locally based time of use tariff	Ease of understanding when prices are cheaper (i.e. weather related)	Difficulty in comparing tariffs on PCWs Uncertainty of price	Those who can automate energy use	
Time of use tariff - static	Certainty over cheaper pricing	Risk of exposure to high price	Those who can automate energy use	
V2X	With smart charger, requires fewer	Uncertainty over impact on battery and	Those who have an EV and can connect it to	Those who do not own an EV, or those who

[32] These have been based on our expertise in the market and, in some circumstances, forthcoming research

	conscious decisions Potential to save on electricity costs	charge levels	their home energy supply	cannot connect it to their home or business energy supply (in addition to list)
Heat as a service	Does not require conscious decision making Potential to save on energy costs, if costs are passed on	Possibly high technology cost or long contract length Difficulty in comparing or understanding 'warm hours'	Those able to pay for and engage with technology	Those on low incomes or risk averse (in addition to list)
Third party flexibility service, e.g. demand aggregator	Requires fewer conscious decisions Potential to earn money on flexibility market	Potential loss of control over appliances	Those able to pay for and engage with relevant technology	Those on low incomes, risk averse, with little flexibility capital or businesses with peak time openings (i.e corner shops)
Demand reduction	Cost saving mechanism	n/a	Those who are able to become more energy efficient (i.e. through appliances or home improvements)	Those who cannot become more energy efficient or use less energy for certain types of demand
Third party energy management companies	Few/no consumer decisions required Financial benefit	Potential loss of control over appliances; potential upfront cost	Those able to pay for and engage with technology	Those on low incomes or risk averse
Smart Export Guarantee	Financial benefit	May require significant engagement.	Those who can afford upfront cost of generation/ storage	Those on low incomes, disengaged, time poor or risk averse
Peer to peer energy trading (especially in	Possible altruistic benefit	Lacking consumer protection	Those who can afford generation/	Those on low incomes/ disengaged/

instances with private wires)			storage	time poor

What are the barriers for consumers in shifting their load/responding to price?

Table 2 (above) outlined many of the market propositions that could arise, featuring elements of DSR, and the risks associated with those models. However, there remain a significant number of potential barriers to engagement. These barriers must be properly identified and actively removed before the vast majority of consumers can engage and can be specific to market model or consumer type. In some cases, barriers can be general to all consumers. Table 3, highlights some of the specific barriers we have identified associated with DSR methods or market models[33].

Table 3. Barriers to engaging in DSR models

DSR models	Barriers
Energy as a service	Lack of trust in energy suppliers; possible high upfront cost; financial lock-in; possible long term commitment; could exclude renters; suitability of house to new technology; perceived loss of control
Time varying tariffs	Lack of trust in energy suppliers; ability for households to change demand based on inflexible lifestyles; perceived lack of control in energy demand due to high number of occupants in home
Peer to peer trading (especially where there is a private wire)	Lack of energy or technology literacy; energy not being a high enough priority; having little control over demand
Battery storage, vehicle to home, vehicle to grid	Lack of access to appropriate technology; high levels of risk aversion; possible complexity of market model; risk value is not high enough to engage
Aggregator/ third party management company	Potentially lack of control, complexity to engage, inability to respond at short notice (without enabling technology)
Smart Export Guarantee	Smart meter functionality; no incentive or price signals

It's possible that there will be a broad range of reasons why consumers are less able to participate in DSR.

[33] These have predominantly been identified through forthcoming research

Research into the experiences of customers with legacy time of use tariffs[34] suggest current barriers include:

- concerns about safety and noise when using appliances during off peak times;
- lack of confidence in knowing their off peak times; and
- concerns over practicality when trying to shift certain types of load

As market offers develop, new barriers to shifting load and engagement[35] could emerge. This could include (but is not limited to) consumers who:

- are on a low income , who may not be able to pay the high upfront costs of enabling technology or who are risk averse to potential financial losses
- live in rented homes, who may not have the autonomy to purchase the technologies in their home and/or face additional challenges in regards to data (especially if there are landlord owned technologies in the property)
- are digitally excluded, depending on the technology used in the home to control devices or to receive flexibility requests
- can't or won't have a smart meter installed, as this may restrict the offers they can get or the technologies they use
- have a disability, if accessibility is not considered from the outset with technologies or new services
- are concerned with data privacy, if privacy is not built in by design and industry does not build consumer confidence
- are time poor or disengaged, if products and services require extensive engagement and complex consumer decision points at the point of purchase. For example it is not easy to understand the value to consumers
- are technology-excluded. Almost all new business models have a requirement to engage in some sort of new technology. This could be relatively 'basic' in the form of insulation, or simple heating controls or more complex requiring engagement with a new innovative heating system or energy storage. It is important not to leave any set of consumers behind so will require careful thought to simplify technology commands, or provide instructions in formats tailored for different consumer types
- are low energy users, where it might not be cost effective for them to invest in enabling technologies
- own an EV but are not able to charge it at home or connect it to their home energy use

There are also wider barriers not attributed to a particular customer group. For example lack of trust in the energy market, lack of motivation to adopt demand side response models and being unable to understand these models. In addition, consumers may be less motivated to engage if there is not a critical mass of products or services offered by industry.

Citizens Advice has commissioned research looking at the scale of some of these barriers for future energy business models. We are happy to share this research with Ofgem, when available.

In addition to many of the same barriers as domestic consumers, microbusiness

[34] From devotees to disengaged, 2012, Consumer Futures
[35] This list has been based on forthcoming research

consumers will face additional barriers including if their peak business operation period overlaps with peak electricity demand, such as pubs and restaurants. Microbusinesses in general are extremely time poor and often unable to engage with complex processes or models. This has been evidenced through other energy scenarios, including uptake of free energy efficiency interventions.

Types of consumption that people are less able to be flexible with and particular groups affected

The ability for a consumer to be flexible with demand varies both with type of demand and with various social, demographic and capital factors. It is important to note that not all consumers or groups of consumers may respond in the same way and that a consumer may face increasing or decreasing barriers to DSR as their personal circumstances change.

In table 4 (below) we have attempted to list some types of consumption that might pose greater barriers to some groups of consumers. This is not an exhaustive list and as the market develops we expect further types of consumption will emerge.

In addition, the list in table 4 might be different for households that have access to domestic storage, an EV and engage with Vehicle-to-Home or Grid, or that self-generate electricity. In those cases, their flexibility will depend on the time of day, generation and state of charge of their battery systems.

Table 4. Types of less flexible consumption

Types of less flexible consumption	Particular groups affected
Electric cooker/ oven	All domestic consumers and some non domestic (eg restaurants)
Use of some electronic appliances, such as entertainment systems	All consumers (domestic and non domestic)
Lighting (depending on time of day and season)	All consumers (domestic and non domestic)
Medically-based energy use	Consumers with health conditions dependent on electricity usage such as home-based dialysis or electric wheelchairs and relevant care facilities
Heat (depending on technology and weather)	Elderly, young families, and those that require warmth for health reasons, most non-domestic settings.
Washing machine, tumble dryer	Young families and large households
All consumption	Low energy users, as they might have little incentive to invest in flexibility capital

Drawing parallels between Value of Lost Load and ability to provide flexibility

Insights about Value of Lost Load (VoLL) may be able to help us draw conclusions about which groups of consumers will be more or less willing and likely to deliver flexibility. However, this is not a perfect read across since VoLL is about losing supply, potentially for a long period of time, whereas DSR events are potentially very short and could earn consumers money. Still we think the following findings are worth considering.

In 2018, network operator Electricity North West conducted a study to understand how the VoLL varied between consumer groups, including small businesses (defined as business with fewer than 250 employees.)[36] This study concluded that:

- Small businesses value uninterrupted electricity supply a lot more than domestic consumers
- Within domestic consumers, the groups that valued uninterrupted supply more than the average value were fuel poor consumers, people with EVs, rurally-based consumers, low income groups, people aged 33-40, vulnerable consumers, people who had never experienced a power cut, and people not connected to the gas network.

Overcoming barriers to new products and services and consumer protection

It's likely there will be a range of regulatory barriers for new products and services. It is Citizens Advice's view that industry will be best placed to begin these conversations with Ofgem. As Ofgem begins to consider the changes needed to the current regulatory framework to enable this, we would welcome a conversation about consumer protections.

Since privatisation and the introduction of the Supplier Hub model, a plethora of regulations have been shaping how consumers are treated by their supplier in the context of being supplied electricity to their premises.

This regime is now being superseded by at least two developments. Firstly, suppliers have moved beyond their role of simply selling electricity and billing customers for their consumption. They have started offering consumers money in return for their flexibility, either to save on network charges or to sell flexibility on to the National Grid. Secondly, companies other than suppliers, most prominently demand aggregators, have started doing the same. Both of these developments necessitate a review of whether consumer protections are still up to scratch, which we understand is part of the joint Ofgem/BEIS Future energy retail market review.

[36] The Value of Lost Load (2018) ENWL https://www.enwl.co.uk/globalassets/innovation/innovation-event-documents/lcni-literature-2018/voll-factsheet-2018.pdf

For some market models, it will be necessary to review regulatory frameworks that are wider than the energy market, to ensure there is no overlap or contradiction between regulators. Citizens Advice recommends Ofgem consider how it might initiate this type of review. Any review should also highlight gaps in regulatory oversight or how regulators may need to work together to ensure good consumer outcomes.

Citizens Advice recommends the regulator considers establishing enhanced protection for consumers who provide flexibility, regardless of whether they do so through a supplier, demand aggregator or any other intermediary. We expect consumers to be equally protected regardless of which route they take to get value for their flexibility.

The current obligations on suppliers are not designed for a flexibility market, and will not be sufficient to protect consumers for several reasons. Flexibility and demand side response are likely novel concepts for many consumers. They will likely struggle to estimate how much flexibility capital they have, the level of behaviour change they are able to make, and the risks involved. If a demand aggregation contract includes the service provider having control over devices in the customer's home or business, consumers are exposed to new vulnerabilities not covered by current supplier obligations.

We already highlighted in our response to Ofgem's 2017 Future Supply Market Arrangements call for evidence that protections for customers of demand aggregators appear insufficient: "*Customers of demand aggregators are covered by the economy-wide provisions on data protection and contract law, and consumer protection regulations (including Consumer Protection from Unfair Trading Regulations). Another possible element for non-domestic consumers specifically are the Business Protection from Misleading Marketing Regulations (BPMMRs), which, among several bodies, Ofgem has the ability to employ. We would argue that aggregators are an advanced form of the Third Party Intermediaries (TPIs) covered by these regulations. However, Ofgem itself currently has limited tools to protect consumers who contract with independent demand aggregators.*

Consumers are therefore at risk from behaviours or offers that are unfair, misleading or unclear. Given demand aggregators have a large amount of information as well as possible control over consumers' energy usage and appliances, the potential for detriment is significant.

We would be in favour of introducing a general authorisation regime with a code of practice to regulate demand aggregators. Relying on voluntary codes of practice may give too little ability to intervene on behalf of the consumer (for instance, as recently seen with the back billing principle). Licensing currently appears disproportionate to the size of the aggregator market and the types of customers that use them. We currently lack evidence on the performance (good or poor) by demand aggregators to justify this level of regulation."

In a previous section[37] of this response, we describe how a change in circumstance can affect the barriers a consumer faces in offering DSR. Consumers should be protected where market models, services or products no longer suit the way they use energy. This may mean consumers are offered longer cooling off periods or the removal of exit fees. We are aware of the tensions that might arise with some market models, where technology is included as part of a service package. Finding the appropriate balance between minimising risks for industry and offering consumer choice will be crucial, as the market develops.

The introduction of FlexAssure is welcome to provide interim protection for microbusiness customers engaging with DSR. However, these protections will need to be strengthened if flexibility markets become widespread. We are particularly cautious about how complex arrangements may be sold to microbusiness customers, given current levels of mis-selling associated with unregulated third parties such as brokers.

In addition, microbusiness consumers enjoy fewer protections under the current regulatory framework. This can leave them more susceptible to bad practice and subsequently offers fewer protections for people who live in business premises[38]. They also face more barriers accessing their smart meter data, to understand how they use energy and what impact that has on their energy bill. We'd therefore advocate for protection frameworks that address these gaps for microbusiness (brokers, smart meter data etc), which mean they are at higher risk, even if they have the same DSR-specific protections as domestic consumers. This would ensure coherent consumer protection.

Based on our experiences of consumers and the energy retail market[39], Citizens Advice has set out the following principles which future flexibility offers should adhere to. These are:

- Flexibility offers must be **fair** and **inclusive** for consumers
- Consumers should be given the **choice** to participate and should **save or earn** money, ensuring the value of flexibility is given back to consumers
- There must be **clear, transparent** information and **fair** terms and conditions
- **Information, services and tools** are provided to help consumers **decide** the suitability of different models. Service providers are responsible for recommending appropriate products, and should regularly reassess this. Consumers should have the freedom to **move easily** between or leave contracts if their circumstances change.
- There should be sufficient **interoperability** to ensure consumers can use technologies with multiple service offers.

[37]Section title: Types of consumption that people are less able to be flexible with and particular groups affected
[38] Citizens Advice expects to publish forthcoming research on how this may affect vulnerable consumers, in the coming months
[39] including the extensive research and analysis we have done

- Consumers should retain a level of **control**[40] they feel comfortable with, if there is increasing automation.
- Service providers must respect consumer rights to **data privacy, transparency and control**
- There are appropriate **consumer protections**, including protection from bill shocks and damage to flexibility assets[41]
- There is clear **dispute resolution** routes and **single** point of contacts
- Those who don't participate in DSR should **not be charged beyond** what is **cost-reflective** and people who struggle to pay their bills should be appropriately supported.

Annex

Glossary of terms

CPP: critical peak pricing, where customers are exposed to occasional higher electricity prices on an irregular basis (often known as 'critical events'). The high price may be fixed (CPP-F) or variable (CPP-V)

CPR: critical peak rebate, where customers are paid for reducing electricity consumption during critical events

RTP: real-time pricing, where electricity prices vary with high frequency, such as on an hourly basis, usually to reflect wholesale prices (sometimes also referred to as hourly pricing [HR])

Dynamic TOU: dynamic time of use, where electricity prices vary at irregular times, but at a lower frequency to real-time pricing and usually with set price bands

Static TOU (also here referred to by the shorthand 'static'): static time of use, where electricity prices vary between set bands at set times of the day/week

TVT: time-varying tariff, the generic term used to describe any tariff where the price of electricity varies in some way over time

Inverted/locally based time of use tariff: An inverted time of use (iTOU) tariff encourages consumers to use energy at sunny times. This can have significant benefits in local areas. Consumers on a tariff designed to reduce winter peak could also access an iTOU in summer.

[40] We describe some elements of control necessary in subsequent sections
[41] For example to batteries, if they are inappropriately and continuously cycled

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