

Potential consumer impacts following the implementation of Market-Wide Half-Hourly Settlement

1. Executive Summary

This paper considers the consumer impacts that could potentially flow from the implementation of Market-wide Half-Hourly Settlement (**MHHS**).

MHHS, enabled by the smart meter rollout, will facilitate a smarter, more flexible energy system, contributing to the ongoing decarbonisation of the energy sector.¹ Once market participants face the true costs of their customers' consumption, they should be incentivised to develop and offer innovative tariffs and other new propositions to their own customers and to all consumers in general. Consumers could be encouraged to manage their energy use better and be rewarded for consuming and exporting electricity at times which are beneficial for the system.

Consumers with load-shifting potential could benefit directly by saving on their energy bills. Others may need help to identify, and benefit from, load-shifting opportunities, or help them mitigate any adverse impacts if they cannot materially change how and when they use electricity. How consumers respond to the new offers will affect the pace and extent of the energy system transition. Irrespective of whether individual consumers load shift to benefit directly, we expect all consumers to achieve significant benefit from the system-wide changes enabled by MHHS.

This paper refers to previous and ongoing research into, and trials of, different innovative flexibility products/services with some consumers, and research into consumer attitudes about engaging flexibly in the energy market. Over time, the results may help us better understand consumers' future load-shifting potential. Where possible, we have referred to quantifiable evidence to explain potential consumer interest in, and attitudes towards, load shifting.

¹ Ofgem has set out its ambition to play a pivotal role in decarbonising the energy sector through our [Decarbonisation Action Plan](#) (February 2020) that supports the Government's aim to reach net zero carbon emissions by 2050.

Otherwise, we have presented qualitative analysis only, also using any anecdotal information that we have obtained through our stakeholder engagement.

1.1 Context

We are publishing this paper alongside a draft Impact Assessment (**IA**) and accompanying consultation document, which will inform our final decision on MHHS which we will set out in the Full Business Case (**FBC**).² At the time of our analysis for the draft IA, we had intended to publish our FBC in autumn 2020. However, in the light of the COVID-19 situation, we are keeping the project timings under review. Further information on this is given in the consultation document.

1.2 Main headlines

- Previous evidence from research and trials suggests there is some domestic consumer interest in saving money on energy bills by using electricity flexibly when presented with options to engage and do so. There is less firm evidence available about small non-domestic consumers' attitudes towards flexible usage.
- The extent to which it is possible to convert consumer interest in using electricity flexibly into enduring behaviour change is uncertain. The potential level of achievable load shifting is unclear, ie how many consumers may change behaviour and over what time period. Some consumers may benefit without any behaviour change if they are already mainly off-peak users. Some may take up technology, if they can access/afford it, to facilitate off-peak use, eg smart appliances, or choose a 'hassle-free' option where load shifting is managed by a third party for them. In our draft IA, we have sought to estimate the potential level of load shifting from existing literature, building a wide range of likely outcomes.³ However, more trial evidence about consumer attitudes towards load shifting is needed to reduce the uncertainty around these estimates and will take time to emerge.
- Early adopters of flexibility products/services may in turn encourage other consumers to load shift, for example, by taking up a smart Time-of-Use (**ToU**) tariff or by developing smart charging habits with an electric vehicle (**EV**).

² The [draft IA and other documents](#) can be found on our website.

³ We have estimated a lower and upper boundary for likely levels of load shifting.

- Improving the energy efficiency of buildings, including through innovative technologies or through retrofit measures in existing buildings, will be important, as will encouraging domestic and small non-domestic consumers to explore flexibility opportunities, in order to achieve lower carbon emissions.

2. Previous work

In the Outline Business Case **(OBC)**⁴ for MHHS, we noted the uncertainties around analysing and quantifying incentives on market participants to innovate, and incentives on consumers to respond and take up new products/services to save money. It is difficult to say how quickly new products/services would develop, the extent to which consumers would take up these products/services, and whether this could result in consumers embracing long-term changes to their energy usage behaviour.

In the OBC, we referred to analysis produced for us by Cambridge Economic Policy Associates **(CEPA)** about the distributional impacts across defined sociodemographic groups of consumers moving to static ToU tariffs compared to remaining on flat tariffs. CEPA noted how different groups of consumers might respond to different motivations and incentives, eg achieving a defined level of bill savings. Whilst most consumers across different sociodemographic groups, including groups of consumers in vulnerable situations, could, with behaviour change, make a modest bill saving by moving to a static ToU tariff,⁵ the research showed that a wide range of positive and negative impacts on energy bills within all of the groups was possible. We need to analyse and consider the distributional impacts further, particularly how to mitigate any adverse impacts that may affect some consumers. There is further information about this in the main IA document.⁶

Alongside the CEPA work, the OBC noted potential Equality Act and regional consumer impacts of MHHS and discussed potential impacts on small businesses. We said we would try to better understand the different impacts by undertaking further stakeholder engagement through a Call for Evidence **(CfE)**.

⁴ See in particular pages 66-69 of the [Market-wide Settlement Reform Outline Business Case](#).

⁵ On average, 2%, in the case of vulnerable consumer groups.

⁶ The [Impact Assessment](#) is on our website.

2.1 Our Call for Evidence: potential consumer impacts following market-wide settlement reform

In February 2019, we published a CfE seeking stakeholder views and evidence about potential consumer impacts that we defined using four themes. We received twenty responses, including one confidential response. We published a summary of the non-confidential responses in July 2019, alongside the responses themselves.⁷

The CfE discussed the potential impacts on both domestic and small non-domestic (or small and medium enterprise **(SME)**)⁸ consumers that could arise following implementation of MHHS. It also set out potential options for future network access and forward-looking network charges that MHHS could enable.⁹ We have since published an open letter¹⁰ setting out the future network access and forward-looking network charges options that we have shortlisted for detailed assessment.

We used our consumer impact themes to ask specific questions to help us better understand if and how consumers may respond to changes in the market. The themes considered:

- *Consumer engagement* - consumer interest in, ability and/or willingness to individually, or through a managed third party service, engage with their energy use and with the market
- *Load shifting* - consumer ability and/or willingness to shift load and use electricity flexibly
- *Technology* - consumers' access to, and ability and/or willingness to, adopt smart or innovative technology that could help support them to use electricity flexibly

⁷ See the [Call for Evidence: Potential impacts for consumers following market-wide settlement reform for all related documents](#).

⁸ We used SMEs to refer to a diverse range and size of businesses, including microbusinesses (see [the Ofgem definition](#)) and larger organisations with up to 250 employees. The consumer protection and engagement issues discussed in this paper will generally affect these non-domestic consumers.

⁹ Ofgem's Access and Forward-looking Charging Reform Significant Code Review **(SCR)** has been considering the nature of users' access to the electricity networks alongside forward-looking charges, ie the type of price signals to send to users reflecting how their actions may either increase/decrease electricity network costs in the future. We aim to ensure that arrangements for small users do not lead to inappropriate outcomes or unacceptable impacts, particularly for those in vulnerable situations. This may be achieved in the charging arrangements themselves or through wider policy and regulatory arrangements. There is more information about [reform of Network Access and Forward-looking Charges](#) on our website.

¹⁰ The [open letter](#) (March 2020) is on our website.

- *Tariffs and charges* - consumer choices on future tariffs and other options, ie the value to consumers of different tariff types and broader options that could include possible new future network access and charging arrangements.

The key points from the CfE responses included the following stakeholder views:

- there is a need for a holistic distributional analysis of all the changes being considered in the transition to a smarter, more flexible energy system, including MHHS and network access and charging reform.
- the importance of policymakers understanding what consumers need, and shaping the future energy system based on what is important to consumers.
- the importance of building fairness into future flexibility offers made to consumers.
- consumers need communication in ways that suit them, so that they better understand their usage and can identify suitable flexibility options.
- that vulnerable consumers may need help to overcome access and affordability barriers to types of new technologies that could allow them to offer flexibility, eg Electric Vehicles (**EVs**) and storage batteries. Responses highlighted the continuing support for energy efficiency measures as a necessary tool to help consumers reduce energy costs as they transition to new flexibility technologies.
- a number of respondents suggested ensuring that consumers receive appropriate protection when engaging with Third Party Intermediaries (**TPIs**) and that TPIs are regulated more effectively for the services they provide to consumers.
- that it is important to provide consumers with adequate protection as new products and services emerge in the future retail market with which they may be unfamiliar, eg smart ToU tariffs and bundled services comprising technology assets with related energy tariffs.

- that there is potential for community-based or local energy solutions to increase consumer engagement, directly or through an aggregation service. This could spread the cost of new technologies to improve access/affordability and provide fairer solutions for vulnerable consumers, eg those living in social housing.

3. Common consumer impacts issues

Based on the CfE responses, broader stakeholder engagement and other evidence we have seen (from previously published trials, research and ongoing work), we have identified six issues that could have future consumer impacts and that cut across the four CfE themes.

1. Educating and empowering consumers regarding their energy usage
2. Using communication tools and technology to influence consumer usage behaviour
3. Offering consumers increased choice in a future retail energy market
4. Role of TPIs
5. Consumer protections in a future energy retail market
6. Community-based solutions

Tackling these issues effectively could help optimise the benefits for consumers of a smarter, more flexible energy system. Implementing MHHS, alongside the smart meter rollout, can help facilitate solutions to address these issues.

We discuss the issues in more detail below, considering the impacts on both domestic and SME consumers.

3.1 Educating and empowering consumers regarding their energy usage

The consumer impact identified by this issue is about using suitable communication tools to help consumers better understand how they use energy and how they could achieve cost savings, including by changing behaviour.¹¹ This could stimulate more engagement, including in load shifting, possibly by consumers taking up new technologies, products and services, informed by a better understanding of their energy usage pattern.

3.1.1 Domestic consumer impacts

The feedback we received through our stakeholder engagement suggests that the following factors are relevant to this issue:

- **Diversity of consumer types** – different households may not be receptive to communication about their energy use in the same way. Those providing this information will need to better understand individual consumers' needs, motivations and concerns. They could tailor solutions to suit consumers' usage 'journeys', eg the value/importance of comfort or simplicity to them. This approach may become critical if the future energy market becomes more sophisticated and consumers seek the best outcome for themselves. Diversity across consumers makes it difficult to assess collective load-shifting potential
- **Forms of communication** – using a common approach to customer communications (eg post, app, email etc.) with different consumers may not take into account their individual preferences, and how the messages provided may resonate with them on receipt. Using face-to-face communication is resource-intensive but may be effective for some vulnerable consumers.

Assessing the impact of different forms of communication on consumers' load-shifting potential is difficult. How effective a form of communication is could depend on how

¹¹ The [BEIS best practice guidance for the delivery of energy efficiency advice to households during smart meter installation visits](#) provides an example of an approach to delivering tailored, high quality advice, in this case, energy efficiency advice during smart meter installation visits.

consumers react to the messages they receive, and their energy literacy level.¹² Survey evidence we received through the CfE (since updated¹³) suggests that:

- 78% of consumers with smart meters said they understand how much energy they use around the home, compared to only 62% of consumers without smart meters
- 91% of consumers with smart meters had an in-home display, of whom 69% (of the 91%) said they checked it at least weekly. Other forms of communication were available to these consumers, eg mobile apps and online accounts. Of the 21% of the 'smart' population with mobile apps, 74% of them used them at least weekly.

Engagement with energy usage information and short-term behaviour change resulting from the smart meter rollout highlighted by this survey suggests that a majority of consumers could positively engage with consumption data. However, there is uncertainty about whether a willingness to take usage data from a smart meter on board would convert into consumer behaviour change that results in load shifting and that endures over time.

- **Timing of communication** – some consumers may respond better to frequent, regular or real-time messaging. Some CfE responses suggested that timing communications at certain times for certain consumers, eg when their contract is due for renewal, could have a greater impact on them as it focuses their attention at a time when they are most likely to make a choice
- **Clear, simple messaging** – a number of CfE respondents noted the importance of easy-to-understand (simple and clear) messaging to increase consumer engagement
- **Trusted information** – a number of CfE respondents suggested that this was an important consideration for consumers
- **Communicating throughout the customer journey** – evidence was presented from a recent trialled local energy initiative¹⁴ in an established local community. Consumers

¹² A recent study ([‘Does data visualisation affect users’ understanding of electricity consumption?’](#)) of university students who were also energy consumers tested their ability to understand graphical data about appliance use. The study found that people draw different conclusions about electricity consumption depending on the kind of data visualisation to which they are exposed.

¹³ See [Smart Energy GB’s report on Smart meters and energy usage \(May 2019\)](#)

¹⁴ See the [final report of the Smart Fintry Innovation project](#)

received information through local campaigns and events about switching to a 'local' energy tariff and to a managed demand-side response (**DSR**) solution. This approach helped engage more 'difficult to reach' community members. A key finding of the trial was that continual advice and support to participating consumers was necessary to retain their trust and interest and for the trial to be effective.

Another ongoing trial¹⁵ has used social marketing techniques to keep consumers engaged in a local energy initiative aimed at improving the energy efficiency of their homes through retrofit solutions. The techniques used include:

- behavioural insights analysis of the local community
- employing community influencers/champions and early adopters of the solutions (around 15% of the total target community) to spread a positive message to their friends and neighbours to reassure them and build trust in the initiative
- holding social activities/targeted use of social media as communication channels.

There is some historic trial evidence suggesting that some domestic consumers could find continual communication about their energy use and price signals useful, in order to prompt action.¹⁶

The above factors could potentially affect whether domestic consumers become more knowledgeable about their energy use and how they apply that knowledge. They may also affect consumers' ability to respond by using, or offering to use, electricity more flexibly, with or without the assistance of new technologies, and affect their choice of tariff, including more sophisticated tariffs.

3.1.2 Small non-domestic consumer impacts

In the CfE, we raised the issue of communication with SMEs regarding their energy usage. As with domestic consumers, we wanted to understand better what effective communication with SMEs looks like, and if it could lead to long-term changes in their usage behaviour or enduring

¹⁵ See the [Carbon Co-op's People Powered Retrofit project report \(June 2019\)](#)

¹⁶ See the [Low Carbon London trial project closedown report \(March 2015\)](#)

load shifting. The feedback we received through our stakeholder engagement suggested the following factors are relevant to this issue:

- **Diversity of SMEs** – there are over 5.9 million SMEs in the UK across many different sectors and work patterns.¹⁷ A single form of communication will not suit every SME type. As with domestic consumers, those providing consumption information may need to better understand these consumers’ needs and provide tailored messaging, products and services
- **Forms and timing of communication** - SMEs are often time poor and monitoring their energy usage may not be a high priority for many of them. Communicating with these consumers can be difficult and would need to be timed appropriately. In the CfE, one non-domestic supplier noted that small businesses would rather reduce, than increase, the frequency of communications with their supplier, meaning that digital messaging may become an appropriate medium. In their view, this could allow SMEs the choice of engaging as they see fit
- **Clear, simple messaging** – clear, simple messages are likely to be valued by SMEs who already identify themselves as time poor. In its CfE response, a non-domestic supplier noted that offering SMEs comparative energy usage data for their peer group could provide them with a meaningful way to engage. Emerging evidence from a recent BEIS non-domestic smart energy management competition – see below - supports the importance of sharing peer-to-peer experiences, or encouraging a sense of competition to make improvements, in the case of schools¹⁸
- **Trusted information** - as with domestic consumers, a trusted source of information could be important to SMEs. For example, brokers play a significant role in the non-domestic sector. In 2017, 67% of microbusinesses and SMEs with more than 10 employees who switched tariff or supplier did so using a broker.¹⁹ A number of CfE respondents noted this point.

¹⁷ See [Business population estimates for the UK and regions \(2019\)](#)

¹⁸ See the [interim report from the Non-Domestic Smart Energy Management Innovation Competition](#) run by BEIS.

¹⁹ See [Ofgem’s State of the Energy Market Report 2018 \(October 2018\)](#)

BEIS has been running a non-domestic smart energy management innovation competition focussed on small non-domestic consumers in the hospitality and retail sectors and schools since 2018. The seven projects that form the competition are now concluding their pilots, to be followed by full evaluation of the results. The aim of the competition is to identify ways that engaging sites through innovative and easy-to-use data tools and services could turn into energy saving actions and consider how the market for such products could develop in the future. Engagement with energy data tools could be a potential first step to wider engagement actions by these consumers. In September 2019, BEIS published interim findings from the competition, with learnings about key message hooks for engaging non-domestic consumers, when best to approach organisations, key actors to engage and key functions to offer.²⁰ Later in 2020, BEIS will publish a series of final reports on the competition research and evaluation.

²⁰ See the [interim report from the Non-Domestic Smart Energy Management Innovation Competition](#) run by BEIS.

3.2 Using communication tools and technology to influence consumer usage behaviour

In 3.1 above, we referred to communication strategies that energy suppliers and others offering energy related services could employ to educate consumers about their energy use. The next step in the customer journey could involve building on that initial engagement to encourage consumers to change their usage behaviour, for example, by load shifting in response to price signals, directly or indirectly, eg through third party managed DSR.

It is important to note that not all consumers may, or may need to, change behaviour. Some consumers who are already mainly off-peak users of energy may benefit from innovations, like ToU tariffs, without changing behaviour. Other consumers who use energy at peak may need support to adopt mitigating measures if they cannot change behaviour.

3.2.1 Domestic consumer impacts

To facilitate behaviour change and flexible energy use by these consumers, an energy supplier or others offering energy related services could use innovative approaches, for example by offering support through a technology option and/or ToU tariff appropriate to the consumer's circumstances. A number of factors may help to understand if consumers are willing to change behaviour:

- **Consumers' propensity to change behaviour** – a CfE response highlighted a survey²¹ that found some evidence of consumer behaviour change:
 - domestic consumers who have had their smart meters for longer periods of time are carrying out more energy saving activities than those who have had theirs installed more recently, ie 5.8 activities by those with a smart meter for more than 12 months compared with 4.4 activities by those with a smart meter for only 0-3 months
 - consumers who have had smart meters for longer periods of time claimed to be looking at ways to make their homes more energy efficient to a greater extent, ie 20% with a smart meter for more than 12 months when compared with 11% with

²¹ See [Smart Energy GB's report on Smart meters and energy usage \(May 2019\)](#)

a smart meter for only 0-3 months. However, the actions of smart meter consumers who claimed to simply monitor their energy usage more closely eased off over time, ie 35% of consumers with a smart meter for more than 12 months agreed that they monitored energy use more closely, compared with 40% that have only had their smart meter for 0-3 months.

These results suggest that at least some consumers may be willing to both educate themselves about saving more money and then take action to increase their energy efficiency if given appropriate tools to do so. However, these results are not firm evidence that consumers have the propensity to engage more in the market, adopting and then sustaining load shifting, eg by taking up and responding through a flexible product/service. Levels of consumer disengagement in the energy market remain significant.²²

- **Communication and technology tools to encourage behaviour change** – identifying load-shifting potential for individual customers may depend on their existing energy usage patterns and their ability to respond, directly or indirectly, to price signals. Subject to data protection rules and any necessary consumer consent being obtained in order to collect the data, granular data should help those providing energy services to consumers to forecast customer load shapes better and develop new user-friendly products and services. Price signals could be managed by consumers themselves, or, for example, consumers could pay a flat price, eg for 'warm hours' or based on convenience, with the variable price risk absorbed by the provider. Stakeholder feedback suggested various tools could help consumers engage directly with their usage, eg smart appliances showing usage in real time, or simple messages sent by providers by app or text or using visual symbols / colours on an in-home display (red, amber, green), to provide price signal prompts. Stakeholders also mentioned the possibility of providers engaging more consumers, directly or indirectly, through bundled energy tariff and flexible technology offers, eg EVs and storage batteries, to help them achieve a bill saving. We discuss technology offers below:

²² See the [Ofgem State of the Energy Market Report 2019 \(October 2019\)](#) (page 36). As of April 2019, just over half of consumers remained on Standard Variable Tariffs (SVTs), which are now subject to the default capped energy price. The [2019 Ofgem consumer survey data](#) shows just over half of domestic consumers have never engaged by switching or comparing tariff, although this is a drop in the proportion of unengaged consumers from previous years.

- **Communicating with consumers disengaged by choice or for other reasons** – we expect all consumers to enjoy the overall system efficiency benefits that follow from introducing MHHS. However, some consumers, despite the offer of new products and services that they could access and afford, may choose not to engage. They may miss out on individual savings by not optimising their flexibility capital.²³ Consumers who choose not to engage directly could still do so indirectly through a ‘hassle-free’ option like managed DSR. Appropriate communication of the offer will be key. We also recognise that some vulnerable consumers may be unable to engage at all because they cannot access/afford new products/services, eg where it requires upfront purchase of expensive equipment like a storage battery. These consumers may need more support and protection to understand the offer, engage/benefit directly or help address any adverse price impacts if these arise. We will remain vigilant and monitor impacts on all consumers, especially consumers in vulnerable situations, considering how offers are communicated to them, and will be prepared to act quickly where we see problems arising.

3.2.2 Small non-domestic consumer impacts

Some SMEs who educate themselves about their energy usage could engage and change behaviour, eg through flexible use or accessing technology to assist with flexibility. Some SME consumers may, due to their existing load profile (ie they are mainly off-peak users already), benefit without changing existing behaviour. As with domestic consumers, innovation may help support change, eg using energy storage solutions or suitable ToU tariffs, with consumers choosing their level of engagement.

- **SMEs’ propensity to change behaviour** – the Federation of Small Businesses (FSB) undertook a members’ survey in 2019 showing that 24% of microbusiness respondents agreed that a ToU tariff could benefit their business, while 32% disagreed.²⁴
- **Communication tools to encourage behaviour change** – the BEIS non-domestic smart energy management innovation competition describes communication tools that could work for these consumers and which are being evaluated, eg the use of free or

²³ In the context of energy, the term ‘flexibility capital’ helps describe the ability of a consumer to use energy flexibly influenced by a wide variety of sociotechnical factors.

²⁴ See the FSB’s report [Time and Energy: An FSB review of the microbusiness retail energy market](#) (March 2020).

low-cost services that 'push' alerts to this group. A range of data tools has been developed for the competition (online and in app form) which aim to educate and empower these consumers in a way that should suit them and encourage them to change behaviour.²⁵ The full evaluation reports for the competition will be published later in 2020.

Effective, clear and tailored communication could significantly influence consumer attitudes towards engagement and load shifting, whether directly or indirectly.

²⁵ See the [interim report from the Non-Domestic Smart Energy Management Innovation Competition](#) run by BEIS.

3.3 Offering consumers increased choice in a future retail energy market

Consumer incentives to change behaviour and shift load could depend on developments that are external to the energy market, eg through increasing consumer take-up of particular types of technology asset. Some CfE respondents identified that, by taking up these assets (eg EVs and storage batteries), consumers could be encouraged to engage more with their energy usage, directly or indirectly and depending on choice. Providers could tap into this flexibility by developing related new energy products and services, eg smart ToU tariffs that are bundled with these assets.

Another relevant factor for domestic and small non-domestic consumers, as 'small users'²⁶ of the energy system, is how they may be charged for use of the electricity networks. We are currently considering reforms to the charging framework to support more efficient and flexible use of the electricity networks.²⁷

3.3.1 Domestic consumer impacts

3.3.1.1 New products, services and business models – we expect that MHHS will incentivise new business models to emerge, so that service providers may offer bespoke or tailored products/services to meet consumer needs which also then deliver wider benefits to the energy system. These could appeal to certain consumer types who are more actively engaged in the market. For example, the growth in TPIs, which interface between traditional energy sector players and consumers, and the uptake of new technologies could mark a shift (or further shift) away from traditional energy supply, where suppliers only sell energy tariffs, towards an 'energy as a service' model where providers build a deeper relationship with customers. For less engaged consumers, this could involve, for example, a third party managing a household's existing smart appliances²⁸ or the offer of a new service to meet a specific customer need (managing 'smart' heating or cooling) on an ongoing basis. The provider could manage price risks for the customer as part of the service offer.

²⁶ In launching the Ofgem Access and Forward-looking Charging Reform SCR, we defined 'small users' as those distribution-connected users who do not have an agreed capacity requirement as the basis for their distribution use of system charges. These users are typically those that do not have Current Transformer meters and include small non-domestic consumers such as microbusinesses, as well as households, some of whom may be vulnerable.

²⁷ See [reform of Network Access and Forward-looking Charges](#) on the Ofgem website for more information.

²⁸ A [BEIS consultation \(July 2018\)](#) has resulted in government plans to take powers to set regulatory requirements for smart appliances through primary or secondary legislation.

Below we discuss the types of technology assets/services through which new business models may emerge. These models could lead to new forms of engagement and communication between consumers and energy suppliers and others offering energy related services, for instance, with the consumer giving control over managing energy usage to the latter in return for a bill saving. We will remain vigilant to, and monitor, the impacts these new business models have on consumers and will be prepared to act quickly where we see problems arising.

3.3.1.2 EV ownership – some CfE respondents identified electrification of transport as a key area where consumers could have opportunities to become more active engagers, taking up EVs to establish flexibility capital or develop existing flexibility capital further which could open up new tariff options like ToU tariffs.

We received evidence of an engagement exercise where the views of various groups of consumers were sought about their attitudes towards EVs.²⁹ In particular, they were asked about different tariff options for smart EV charging that could facilitate increased off-peak charging. The results, set out below and expressing respondents' views, indicate that they see both opportunities and risks arising, including barriers to achieving benefits.

The study found that opportunities associated with EV ownership link to the acceptability of suitable and complementary EV tariffs where those tariffs:

- are easy to understand for EV owners and messages about potential energy bill savings are conveyed in an accessible way, eg using smart charging apps and websites. Consumers may even accept more complex ToU tariffs (static and dynamic) if the messaging about them is both clear and comprehensible
- offer a previously untapped revenue stream for consumers, eg Vehicle to Grid (**V2G**) services that provides an additional take-up incentive
- offer a hassle-free solution, eg third party management of EV charging, including smart charging options communicated through apps and websites.

²⁹ See the [Citizens Advice/TRL research work on Smart EV charging \(June 2019\)](#). Groups of consumers included EV owners, drivers of internal combustion engine vehicles who are considering the purchase of an EV and those who are not, and car owners with different needs (with and without children).

The same study found that some challenges and risks associated with EV ownership could include:

- off-peak EV charging may not be feasible for specific consumer types, eg families with young children that follow a certain lifestyle pattern that is incompatible with off-peak charging
- trust issues associated with an unfamiliar third party offering a potentially flexible or hassle-free solution
- a perceived loss of EV battery charge or reduced battery health when the consumer needs it, affecting the feasibility of V2G services and managed charging schemes
- the loss of security or data privacy even if a smart charging solution seems convenient, ie if the consumer cedes control to a third party for managed smart charging solutions
- how quickly charging point infrastructure could become available to consumers. For example, those with off-road charge point capability may have more incentive to invest in EVs than those without, such as consumers (including vulnerable consumers) living in flats or in social housing, affecting the latter's ability to access any potential savings
- how bundled service offers that may include an EV, EV tariff and related assets like smart chargers are packaged up. Some survey respondents were concerned about being locked into contract terms that may become unsuitable for them and from which it would be difficult to exit and cancel the contract.

Through our Innovation Link work, we have observed possible new business models that could seek to engage EV users by:

- selling electricity for EV-use only directly to the consumer at a destination, eg through various resale options at a supermarket charge point
- using existing street furniture like lampposts for EV charging infrastructure, paid for by subscription or through pay-as-you-go models
- using affiliations between EV manufacturers or charge point developers and existing suppliers to provide bundled smart charging services at a consumer's premises.

We have offered non-binding guidance on whether these models constitute a supply of electricity.³⁰

³⁰ See our non-binding guidance ['What you need to know about selling electricity to Electric Vehicle users' \(October 2019\)](#).

3.3.1.3 Heat as a service – as with electrification of transport, the electrification of heat is another area which may engage consumers and open up new tariff options for them, eg ToU tariffs. Consumers may view their energy use in terms of the comfort and convenience it provides rather than just about the price they pay. Some consumers may choose to heat their homes when they need it and not based on the cost at the time of use. However, for some other consumers, who may be on low incomes or vulnerable, the cost of heating may be an affordability issue. They may under-heat their properties rather than heat them to an adequate comfort level due to the price. Decarbonising heat in the future to meet net zero carbon targets and obtain environmental benefits could involve more electric heating from heat pumps to complement or replace existing gas heating, coupled with smart controls to meet consumers' comfort and convenience needs.

Some recent research looked at 'heat as a service' offerings, eg where the customer agrees to, and pays, a fixed cost for heating their home to their required level of comfort to a provider.³¹ For this type of offering, the research suggests:

- where a new heating system is installed, eg an air/ground source heat pump, or for upgrades to the existing electric heating system, savings are possible at increased efficiency levels by monitoring and learning from data about how the consumer uses heat and optimising the comfort levels through smart controls
- hybrid heating systems operated by smart controls and integrating an air source heat pump with an existing/new high-efficiency gas boiler that could use 'green' gas in the future, could offer more savings and decarbonisation potential where the system automatically switches between fuels economically across the day³²
- managed smart controlled heating can boost consumer flexibility and enable DSR
- the basic barriers for some consumers to these potential benefits are the high upfront costs of installing new technology that creates an affordability issue, and issues of access for certain housing types, eg private rented accommodation where landlord permission is needed to install and operate. Investors in, and providers of, these technologies could end up excluding consumers from the benefits if they consider that continual occupancy changes prevent them implementing a fully-commercialised solution, ie a lack of a long-term commitment locks out consumers

³¹ See the [Citizens Advice/Impact research 'Future for All' \(July 2019\)](#)

³² See the [Freedom Project's pilot study on the application of smart hybrid heating systems \(deploying existing gas and non-gas heating systems alongside air source heat pumps\) \(October 2018\)](#)

- trust will be an issue for consumers as the provider may be unfamiliar and consumers may not know who to approach if things go wrong
- long-term contracts to pay the cost of installation and ongoing operation could tie consumers into arrangements that are inflexible to their life circumstances
- digital exclusion for some, perhaps already vulnerable, consumers may affect their understanding and ability to use a smart technology offering, eg where the heating uses smart app-based controls. Continual support or a much simpler, easy-to-understand offering may be required
- having a minimum level of energy efficiency in the home may be a prerequisite to achieving both increased efficiency and expected cost savings from installation.

The research above indicates that a third party managed service, appropriately delivered and explained, could overcome consumer scepticism and increase engagement. Consumers' confidence in the service may also depend on whether and how it protects them for non-energy supply aspects of the contract with the provider, eg physically fitting the system.

BEIS has kick-started an Electrification of Heat Demonstration Project funded through its Energy Innovation Programme.³³ The Project aims to demonstrate the feasibility of a large-scale rollout of heat pumps in GB by recruiting 750 homes of different housing archetypes to participate and deploy this technology.

3.3.1.4 Storage batteries – facilitating and delivering a smarter, more flexible energy system that achieves decentralisation and decarbonisation, so consumers who both consume and generate clean, green energy (prosumers) and who offer direct or indirect flexibility potential at a local level, will be increasingly important.³⁴ Analysis of smart meter data from consumers who have consented to its collection and use may help discover available flexibility. Storage batteries connected to solar panel/PV solutions, creating virtual power plants (**VPPs**), are potential innovations here.³⁵

³³ There is more information available about [the Electrification of Heat Demonstration Project](#) online.

³⁴ Many of the sandbox schemes supported by Ofgem's Innovation Link are seeking to actively trial consumer participation in peer-to-peer (P2P) and local schemes, some involving EVs and energy storage. There is more information about the [Enabling trials through the regulatory sandbox](#) and the [Outcome of sandbox window 1](#) on our website.

³⁵ One example of a VPP is a [storage battery demonstrator supported by BEIS \(ReFLEX Orkney\)](#)

A recent consumer research study by Citizens Advice asked consumers about their views on adopting storage solutions. It noted a number of opportunities for consumers,³⁶ namely:

- the ability to play an active engagement role in the energy market as a prosumer. Where storage batteries are fitted alongside solar PV³⁷, consumers could self-generate and sell the excess energy for a defined rate³⁸ as well as store energy in the battery when electricity prices are low for their own use when prices are high. For consumers choosing not to directly engage, an aggregation solution like VPPs may help
- consumers could sell excess energy locally to their neighbours, or more widely, through new trading platforms such as peer-to-peer (**P2P**) trading. Some consumers in the study showed an interest in 'energy banks' where they could donate energy to fuel poor households
- consumers who are environmentally aware and/or tech-savvy may be more willing to adopt these solutions if the electricity generated is 'green' and they may find the self-sufficiency aspect of using stored energy attractive. The use of data to optimise battery use may require continual engagement, which these types of consumers may prefer, eg using a smart app or tracker that offers opportunities to trade excess energy.

The same study also highlighted certain challenges and risks for consumers of storage solutions:

- the upfront costs of storage batteries may determine how many consumers are able to adopt the technology. Alongside affordability issues, there is a risk consumers are tied to long-term contracts unsuited to their changing circumstances. Bundled solutions involving long-term contracts – battery plus an energy tariff - could affect some consumers' willingness to engage with and take up these solutions
- installation issues may limit battery capacity in domestic housing stock, reducing engagement and flexibility opportunities. In particular, consumers living in private

³⁶ More information about consumer interest in the trading platform solution using a storage battery and VPP is available in the [Citizens Advice/Impact research 'Future for All' \(July 2019\)](#)

³⁷ A [Renewable Energy Association \(REA\) and Electralink report on Flexible Futures \(October 2019\)](#) highlighted evidence from a [survey by consumer group Which?](#) suggesting that battery storage developers are targeting consumers who have solar PV installed and that these consumers are receptive to complementing their PV installation with a storage battery to use more solar generated electricity.

³⁸ Consumers who install certain low-carbon renewable generation can receive payment for exporting any generated electricity. There are more details about these schemes, the [Feed-in-Tariff \(FiT\) programme](#) (which closed to new applicants in April 2019) and the [Smart Export Guarantee \(SEG\)](#) (which came into force in January 2020), on our website.

rented accommodation may have issues accessing the technology due to landlord consent and so may miss out on possible benefits

- consumers would need to be confident about participating in a P2P scheme and trust the provider operating the scheme, as it could be a sophisticated arrangement. Consumers could also become over-reliant on local community cohesion, eg trusting their neighbours to deliver power when they require it, and so would need back-up options from the local network.

3.3.2 Small non-domestic consumer impacts

There may be innovative products/services to help SMEs offer flexibility to the energy system. Some CfE respondents noted possible solutions that could be useful for SME consumers, involving direct engagement or a community-based solution, depending on a SME's location and set up. We consider community-based solutions below.

3.3.2.1 EV ownership - some recent research highlights how SMEs could use EVs to offer flexibility based on interest from SMEs in EV ownership.³⁹ A recent survey by the FSB also noted significant SME interest (40% of microbusiness respondents thought they may own an EV in the next five years).⁴⁰

The research noted that SMEs did not find dynamic ToU tariffs to be acceptable.⁴¹ To gain greater acceptance, EVs may need to work for SMEs with set working times who may find it hard to shift usage to a different time. SMEs would favour a third party charge management scheme combined with a ToU tariff which passes the hassle of managing charging to the third party while still saving the SME money. The research also noted that SMEs would be broadly happy with the cost saving from buying an EV and that additional savings associated with smart charging are relatively insignificant for them.

3.3.2.2 Smart Appliances - some SMEs may also be able to reduce their energy demand or offer DSR by using smart appliances. SMEs operate in various sectors, some of which could be open to smart appliance use, eg chillers. These can normally be turned down for short periods

³⁹ See the [Citizens Advice/TRL research work on Smart EV charging \(June 2019\)](#)

⁴⁰ See the FSB's report [Time and Energy: An FSB review of the microbusiness retail energy market](#) (March 2020)

⁴¹ See the [Citizens Advice/TRL research work on Smart EV charging \(June 2019\)](#)

to flex demand as they are usually very energy intensive. We are aware of trials of smart refrigeration by some larger non-domestic consumers such as supermarkets.⁴² Data gathered from these trials could lead to managed DSR emerging in the SME sector, eg as a VPP proposition. One example could involve turning down industrial fridges when the daily defrost time coincides with a period when more electricity is needed on the grid. Another could involve managing or flexing air-conditioning load in hotels onsite or through a VPP.⁴³

3.3.2.3 Solar PV and Batteries - as with domestic consumers, SMEs could become more engaged through the use of solar PVs and storage batteries. A recent report noted that there are 200,000 solar PV installations located at business premises.⁴⁴ The report also suggests that, where a solar PV installation is already in place in a business premises, the business is also more likely to invest in battery storage. Another survey quoted in the report states that consumers benefitting from the Feed-in-Tariff (**FiT**) scheme are more likely to own a battery in order to optimise the use of their solar panels.⁴⁵

⁴² Tesco, in collaboration with the University of Lincoln, is [currently trialling smart refrigeration technology at the University's Refrigeration Research Centre](#).

⁴³ See the [presentation by Upside Energy](#) at Reading University's Flexibility of Energy Demand event (February 2019).

⁴⁴ See the [Renewable Energy Association \(REA\) and Electralink report on Flexible Futures \(October 2019\)](#). Please note that the report does not distinguish between business types, so the businesses referred to could include larger businesses.

⁴⁵ See pages 18-19 of the [Renewable Energy Association \(REA\) and Electralink report on Flexible Futures \(October 2019\)](#).

3.4 Role of Third Party Intermediaries (TPIs)

A number of CfE responses highlighted the current and future role of TPIs in the retail energy market, expressing concern that TPIs are less well regulated when compared to licensed suppliers,⁴⁶ and the potential impact on consumers who use TPIs to find the best energy deal for them. In particular, respondents were concerned that, in a more complex future market, more non-licensed providers would engage with end consumers as their primary contact with the energy system, offering increasingly sophisticated energy products/services such as ToU tariffs. They suggested that TPIs should be subject to suitable oversight if they act against consumers' interests, eg mis-selling risk. Potential areas for consumer detriment could arise over transparency of offers or lack of available contact information if something went wrong.

TPIs such as price comparison websites (**PCWs**), brokers and auto-switching websites are already increasingly active, offering energy consumers new ways to engage to find the most suitable energy tariff for them. As more actual smart meter data becomes available, provided consumers consent to sharing it, in line with data protection rules, new services could emerge to offer consumers more choice, eg aggregation services managing blocks of demand. However, some CfE respondents expressed concerns about more effectively regulating TPIs for the services they provide to consumers.

How TPIs operate in a future energy market may affect levels of consumer engagement, trust in providers, the breadth of tariff and service choice offered, and the scale of market penetration of new technology solutions, and may need further consideration.

3.4.1 Domestic consumer impacts

TPIs are trusted partners for many domestic energy consumers. Our most recent State of the Market report noted that 49% of these consumers use PCWs to find an energy deal, a further 8% use an 'auto-scanning' service to notify them of new deals, and 2% use an automatic

⁴⁶ Unlike the Financial Conduct Authority (FCA) and Civil Aviation Authority (CAA), Ofgem does not regulate TPIs. Some consumer protection is provided by general consumer law and through the [voluntary Confidence Code](#) available on our website. The Government's [Smart Data Review](#) proposes a cross-sectoral approach to regulating Third Party Providers. We are considering how to develop the existing regulatory framework so it can react quickly and promptly to potential consumer detriment arising from TPI involvement in the energy market.

switching service.⁴⁷ As the energy market evolves, there may be increased scope for TPI involvement in the market that affects these consumers:

- **Use of midata in energy (midata)** – Ofgem will develop the midata service to allow consumers to easily and quickly share their energy data digitally with accredited third parties.⁴⁸ Midata will allow accredited TPIs to access consumption and tariff data, with the appropriate lawful basis, so they can deliver innovative new products and services. This could include simpler and more accurate tariff comparisons, or diversification of existing tariff comparison services to offer value added services and access to a wider range of tariffs, including ToU tariffs. These services will require access to more granular customer data, particularly about load profile and flexibility with energy use, to determine the suitability of a product. As energy products become more complex, TPIs could play an important role in enabling consumers to compare different products and access tailored advice. This should make it easier for customers to compare and use ToU tariffs, thereby realising the value of the half-hourly data being supplied by smart meters. TPIs offering such services already have responsibilities under data protection legislation, including the General Data Protection Regulation (**GDPR**), to ensure they have a lawful basis for processing customer data. Midata will work alongside existing data legislation, to create a standardised approach for third parties to access consumer data.
- **Principles-based regulation** – we take a principles-based approach to energy regulation for licensed suppliers to enable consumers to have appropriate protection while providing opportunities for market participants to innovate.⁴⁹ However, this framework does not apply to TPIs. To ensure consumers can confidently engage in the market, we may need to consider if and how we adapt or build on the principles-based approach, to tackle any new forms of consumer detriment where the responsible providers are unlicensed. We discuss this approach further below in relation to consumer protection in a future energy market.

⁴⁷ See the [Ofgem State of the Energy Market Report 2019 \(October 2019\)](#)

⁴⁸ Ofgem has paused the midata programme for the current financial year (2020/21). Ofgem's retail market programmes, particularly the Switching Programme and MHHS, will have considerable impacts on the retail data landscape over 2020 and 2021. Given the synergies and potential overlaps, we have paused our work temporarily; however we are still committed to delivering midata and enabling consumers to realise the benefits of midata. More information about the [Midata in energy project](#) is available on the Ofgem website.

⁴⁹ The [principles-based regulation decisions](#) are on the Ofgem website.

- **Use of our Innovation Link service** – for anyone, including TPIs, seeking to try out an innovative product/service in the energy market, we can offer feedback, for example about the regulatory implications of a proposed business model.⁵⁰ Through our sandbox service, we have also helped innovators to develop small-scale trials with consumers to test new products or services in a real world environment. Engaging directly with innovators helps us understand innovation in energy markets and improves our ability to advise TPIs and others about any regulatory issues affecting their proposition, helping build early confidence in the viability of an emerging product/service.

- **Aggregation services** – aggregation services could significantly affect domestic consumer engagement in the future energy market. Many consumers may prefer hassle-free engagement through simple-to-understand propositions.⁵¹ Bill savings drive many consumers’ expectations, and so an aggregator could allow them to save without directly engaging in the market if it manages any flexibility on their behalf. It could manage the service for groups of consumers at scale (as a volume-driven business), eg V2G services using EV load, offering flexibility to a grid operator as a balancing Demand-side response (**DSR**) service. There are current examples of large industrial and commercial consumers offering managed DSR. Scaling up volumes could mean aggregating for a significant number of domestic consumers who have some flexibility to offer at a national or local level (a local energy market). Some recent research⁵² suggests that consumers may be wary of taking up these services due to:
 - trust issues (where the provider is new to market and unfamiliar to consumers)
 - loss of consumer control over their appliances (if remote control of ‘smart’ appliances by the provider is part of the contract)
 - consumers needing ongoing support if offering flexibility through a specific asset, eg a storage battery.

Nevertheless, there are some emerging examples of the trialling and adoption of these types of aggregation services within small local communities.⁵³

⁵⁰ There is more information on our website about the [Innovation Link and relevant case studies](#) and the evolution of the [regulatory sandbox service](#).

⁵¹ The [Ofgem State of the Energy Market Report 2019 \(October 2019\)](#) highlights how hassle can be a perceived barrier to existing consumers’ willingness to engage through switching.

⁵² See the [Citizens Advice/Impact research ‘Future for All’ \(July 2019\)](#).

⁵³ See the [Virtual Power Plant \(VPP\) concept \(Solo Energy case study\)](#) where our Innovation Link team provided guidance.

3.4.2 Small non-domestic consumer impacts

- **Brokers** – for these consumers, TPIs, in the form of broker services, continue to be widely used to find energy deals. A recent FSB survey noted that 30% of the microbusiness members who responded used a TPI to change contract.⁵⁴ In the future, their role may change from the current position where brokers in most cases primarily or solely focus on brokering energy deals with SMEs, to one where they offer comprehensive advice on the best energy service for SMEs too, for example by providing advice on the most suitable technology package to procure. In the future, more SME consumers may turn to TPIs or innovators for a holistic energy service.
- **Aggregation Services** - aggregation services could potentially have a significant impact on SME engagement in the future energy market. SMEs may seek simple, suitable, tailored solutions, especially if energy is not a priority for them. Aggregators could become a key enabler of greater SME engagement in the energy market. Some recent research indicates that some SMEs may prefer using a third party to manage their energy supply to delegate some of their work load, saving both time and effort.⁵⁵

⁵⁴ See the FSB's report [Time and Energy: An FSB review of the microbusiness retail energy market \(March 2020\)](#).

⁵⁵ See the [Citizens Advice/TRL research work on Smart EV charging \(June 2019\)](#).

3.5 Consumer protections in a future energy retail market

With a wide range of new business models expected to develop in the future retail market, consumers should feel adequately protected from potential detriment. We want to ensure less engaged consumers are not left behind in the transition to a smarter, more flexible market. Addressing possible detriment may involve ensuring that existing protection mechanisms are appropriate, using them more flexibly to meet future challenges, and adding to them if new sources of detriment are identified.

3.5.1 Domestic consumer impacts

The existing consumer protection framework (principles-based regulation) applies to licensed industry parties (energy suppliers). It aims to be future-proof in how it applies to these licensees. There are two key principles we monitor and enforce through principles-based regulation - informed choices and the vulnerability principle – supplemented by specific supplier communication principles. We ensure that licensed entities comply with their obligations regarding the energy products they offer, ie tariffs. We can investigate and may take enforcement action against them for breaching these obligations.⁵⁶

In a future energy market, other considerations may become relevant to consumer protection, both as opportunities and as challenges:

- **Placing the consumer at the heart of the energy 'journey'** – some CfE respondents noted that market participants should consider the needs of consumers first rather than design and develop products/services and then try to fit consumers into their chosen business models. In their view, taking the latter approach could create a higher risk of mis-selling or other forms of consumer detriment leading to consumers disengaging, affecting the delivery of a smarter, more flexible energy system. One CfE respondent suggested that developing a new set of flexibility principles or a consumer flexibility charter could usefully ensure the energy market promotes consumers' needs first. Our principles-based regulation framework aims to provide a high level of consumer protection whilst also promoting innovation and

⁵⁶ Ofgem's [Enforcement Guidelines](#) are available on our website.

competition that could benefit consumers through lower bills. As the market develops, we will monitor if the framework is robust to changes in the market.

- **Risks and liabilities attached to new bundled energy products and services** – new products and services may be developed that bundle an asset with an energy tariff to deliver a particular outcome, eg providing the consumer with the potential to use energy flexibly.⁵⁷ Where an asset is sold alongside an energy tariff, this could involve asset-financing arrangements and may give rise to product liability issues associated with the asset. A complex bundling arrangement could require suitable safeguards for consumers to avoid detriment. Some CfE respondents suggested the following additional consumer protection measures:
 - long cooling-off periods, allowing consumers to end a contract if it becomes unsuitable over time
 - no exit fees, so consumers do not lose financially from ending an arrangement that may no longer be suitable
 - ‘try before you buy’ arrangements that would allow consumers the opportunity to receive a ‘free’ period of use of an asset before making a long-term commitment to purchase it
 - potential recompense for the loss of use of an asset that is not portable, eg a storage battery.

Risks and liabilities may become a significant deterrent to consumers contracting for flexibility assets alongside energy tariffs. Providers may also decide not to offer potentially suitable flexibility solutions if consumers lack trust in the provider. We will need to consider these challenges as new products and services emerge so that the consumer protection framework meets consumers’ needs, whilst also not stifling innovation by potential service providers:

- **Respecting consumers’ data choices** – to access certain new products/services, consumers may need to share their usage data with a provider. Ensuring that provision and use of data is only for the purpose for which it was requested, in line with data protection rules, will be critical to build consumer trust. Consumers are less likely to

⁵⁷ Although an asset could be sold independently of an energy tariff too.

engage in the market if data is misused or providers are not open and honest about how their data will be processed.⁵⁸

3.5.2 Small non-domestic consumer impacts

The issues discussed above that impact on domestic consumers are also relevant to small non-domestic consumers. We will consider if existing protections for these consumers are robust or if any changes are required.

⁵⁸ The rules around how consumer smart/advanced meter data may be collected and processed are set out in the [Data Access and Privacy Framework](#), last reviewed by BEIS in November 2018. The review considered all uses of data other than for settlement purposes.

3.6 Community-based solutions⁵⁹

Consumers who are otherwise disengaged may find that a local energy solution helps them to engage and opens up new tariff options for them, eg ToU. Consumers may choose to take a stake in the energy solution, eg as a financial shareholder in the relevant scheme to earn a return, or for non-financial reasons, eg they view the scheme as good for their community or for the environment. The local scheme may provide revenue-generating opportunities to all consumers involved, eg bill savings. Some schemes may involve siting renewable generation, eg a storage battery plus solar PV, in a community building. With the right engagement, consumers may discover their own flexibility capital and aim to create an interface with the local scheme to benefit both themselves and the community. Associating these schemes with a cheaper local energy tariff could also encourage greater engagement.

3.6.1 Domestic consumer impacts

The level of impact on domestic consumers of any community-based solution will depend on the way that the particular scheme is established and how it seeks to engage consumers:

- **Individual v. community engagement** – it would be for consumers to choose whether to take individual action or act as part of a community to offer flexibility and to reduce their bills. Where a community acts in concert, there may be shared benefits and access to flexible products and services that could otherwise be beyond the reach of individuals.
- **Local grid-balancing services** – there is some evidence of projects aimed at developing household DSR services so communities of households can become flexible and share the financial benefits.⁶⁰ These communities could, through an aggregation service, offer flexibility collectively to the local electricity network operator, eg pooling through a Virtual Power Plant (**VPP**) solution. The grid operator could contract for assistance from a VPP that increases the efficiency of the energy system, lowers costs and helps address network constraints. One potential risk of connecting local schemes

⁵⁹ For more information on local energy, see our [Future Insights paper on Local energy in a transforming energy system \(January 2017\)](#).

⁶⁰ See the [Virtual Power Plant \(VPP\) concept \(Solo Energy case study\)](#) and [the Moorhouse Solar Array project](#) serving a community of 500 homes through an array of over 7,000 solar panels.

piecemeal could arise from a local network operator losing sight of which schemes are connected, creating system inefficiencies. The Energy Networks Association (ENA) is developing an Open Networks solution⁶¹ to facilitate active network management to minimise inefficiency and increase control over the contributions of local community energy schemes.

- **Peer-to-peer (P2P) solutions** – P2P solutions may allow consumers and prosumers an opportunity to trade energy directly with one another, ie generating energy and selling any excess to others. There is growing interest in P2P, with ‘peers’ self-identifying each other based on shared characteristics or interests. Consumers may also choose a third party to facilitate P2P through a local trading platform. Consumers with a ‘flexibility’ product, such as a storage battery plus solar PV, could sign up to a trading platform service managed on consumers’ behalf. P2P appears more complex than VPP and could involve more active engagement, management and, potentially, real time decision-making by consumers about when, and how much energy, to trade. Consumers may therefore prefer a managed aggregation service.

Recent research on consumer attitudes to P2P trading⁶² suggests some interest in it. This research highlights potential consumer benefits of P2P such as increased choice, cost savings and revenue generation capability, simplicity (if paying a regular monthly fee allows a consumer to become a P2P platform ‘member’), and supporting the local community and the environment generally (with an emphasis on sourcing renewable generation).⁶³ The research also highlights some potential consumer downsides, such as potential complexity of the proposition, trust in a third party provider managing the P2P trading platform, and a risk of tying consumers into a long-term arrangement (including the upfront cost of a flexibility asset) that may not suit some over time.

One particular challenge may be how to appropriately regulate P2P trading and whether it challenges the robustness of existing consumer protections.

⁶¹ See the ENA website for more details about the [Open Networks solution](#)

⁶² See the [Citizens Advice/Impact research ‘Future for All’ \(July 2019\)](#)

⁶³ For example, see more information about the [Powerpeers P2P trading model](#) currently operating in the Netherlands.

- **New providers of local or 'community' energy solutions** - this category could include commercial entities investing in solutions for their customers' use locally that then have wider community application.⁶⁴ Non-licensed players who enter the energy market could innovate, offering consumers new ways to deliver flexibility. However, these providers may be unregulated, or exempt suppliers⁶⁵ subject to a 'lighter' regulatory regime. As the market develops, we envisage routine monitoring of the new business models that emerge.

3.6.2 Small non-domestic consumer impacts

For SME consumers, a number of technology offerings may help them engage and could also work in a community context. SMEs based in business parks with shared facilities could save energy costs collectively through a community-based solution where otherwise there may be less opportunity to save as an individual business.

Storage Batteries - some CfE responses noted that storage batteries might not have a large take-up due to the investment needed to purchase them, even if they could provide long-term energy savings. However, the scope for storage batteries to work in a community context where SMEs operate, such as alongside solar PV in office blocks, shopping centres and business parks, could benefit them. Energy providers could develop and offer these solutions, especially aggregation services. In an FSB survey, 40% of the microbusiness members that responded said they would consider using batteries to avoid using electricity at expensive peak times.⁶⁶ As with domestic consumers, there are a number of opportunities, challenges and risks that come with using storage batteries in community settings where SMEs are active which are noted above under P2P solutions.

⁶⁴ As an example, see [Lidl GB's plans \(28 October 2019\)](#) to install rapid EV charging points at many of their supermarket locations.

⁶⁵ The Electricity Act 1989 allows companies, who meet certain criteria, to be exempt from having an electricity generation, distribution or supply licence. These arrangements are set out in the [Electricity \(Class Exemptions from the Requirement for a Licence\) Order 2001](#). The regime was developed to minimise the burden of regulation on persons operating in a limited manner, and can be suited to small-scale, site-specific, or more localised supply models. Exempt supply provides less consumer protection than its licensed counterpart. There is a [summary of these arrangements](#) online.

⁶⁶ See the FSB's report [Time and Energy: An FSB review of the microbusiness retail energy market](#) (March 2020).

4. Next steps

As noted above, work continues to identify opportunities for consumers and address some of the challenges and risks they may face in the future energy market. This work seeks to strengthen the evidence base and identify how consumers may best realise the benefits of innovation and greater consumer choice that MHHS can facilitate. The work includes:

- Ofgem’s Innovation Link work⁶⁷, midata project⁶⁸ and Access and Forward-looking Charging Reform⁶⁹
- using Ofgem’s existing powers to provide the flexibility innovators need to bring new products and services to market⁷⁰
- BEIS’s Non-Domestic Smart Energy Management Innovation Competition⁷¹ and Electrification of Heat Demonstration project.⁷²

We will continue to build a better understanding of the needs, interests and behaviours of different consumer segments, and use research to understand how to stimulate the necessary consumer behaviour required to enable them to play their role in decarbonisation, as well as what steps Ofgem needs to take to support this. This is likely to include exploring how to encourage uptake and engagement with ToU tariffs and EV charging.⁷³

We are publishing this paper alongside our draft IA and accompanying consultation document, which will inform our final decision on MHHS which we will set out in the FBC.⁷⁴ We welcome views on the contents of this paper (the details for responding are set out in the consultation document) from all parties with an interest in facilitating a smooth and efficient transition towards a flexible, decarbonised electricity sector. We particularly welcome views on whether you agree with the consumer impacts issues we have identified and any issues you think we may have missed. Where possible, please include any further evidence you have about

⁶⁷ See the [Ofgem Innovation Link work, the sandboxes we ran and relevant case studies](#)

⁶⁸ Ofgem has paused the midata programme for the current financial year (2020/21). Ofgem’s retail market programmes, particularly the Switching Programme and MHHS, will have considerable impacts on the retail data landscape over 2020 and 2021. Given the synergies and potential overlaps, we have paused our work temporarily; however we are still committed to delivering midata and enabling consumers to realise the benefits of midata. See more information about the [Midata in energy project](#) on the Ofgem website.

⁶⁹ See more information about [reform of Network Access and Forward-looking Charges](#) on our website.

⁷⁰ See our blog on [Supporting retail market innovation for net zero](#).

⁷¹ See the [interim report from the Non-Domestic Smart Energy Management Innovation Competition](#) run by BEIS.

⁷² There is more information available about [the Electrification of Heat Demonstration Project](#) online.

⁷³ There is more information in the Ofgem [Decarbonisation Action Plan](#) (February 2020).

⁷⁴ The [draft IA and other documents](#) can be found on our website.

consumer impacts that you consider relevant. Once the consultation is closed, we will consider all responses carefully. We will publish any non-confidential responses alongside a decision on next steps on our website. If you would like any part of your response to be considered confidential, please let us know in your response alongside an explanation of why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, place the confidential material in separate appendices to your response.

As noted, at the time of our analysis for the draft IA we had intended to publish our FBC (including our final decision on MHHS) in autumn 2020. However, in the light of the COVID-19 situation, we are keeping the project timings under review. Further information on this is given in the consultation document.

You can contact the Settlement Reform Team at: halfhourlysettlement@ofgem.gov.uk