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Social Research Institute

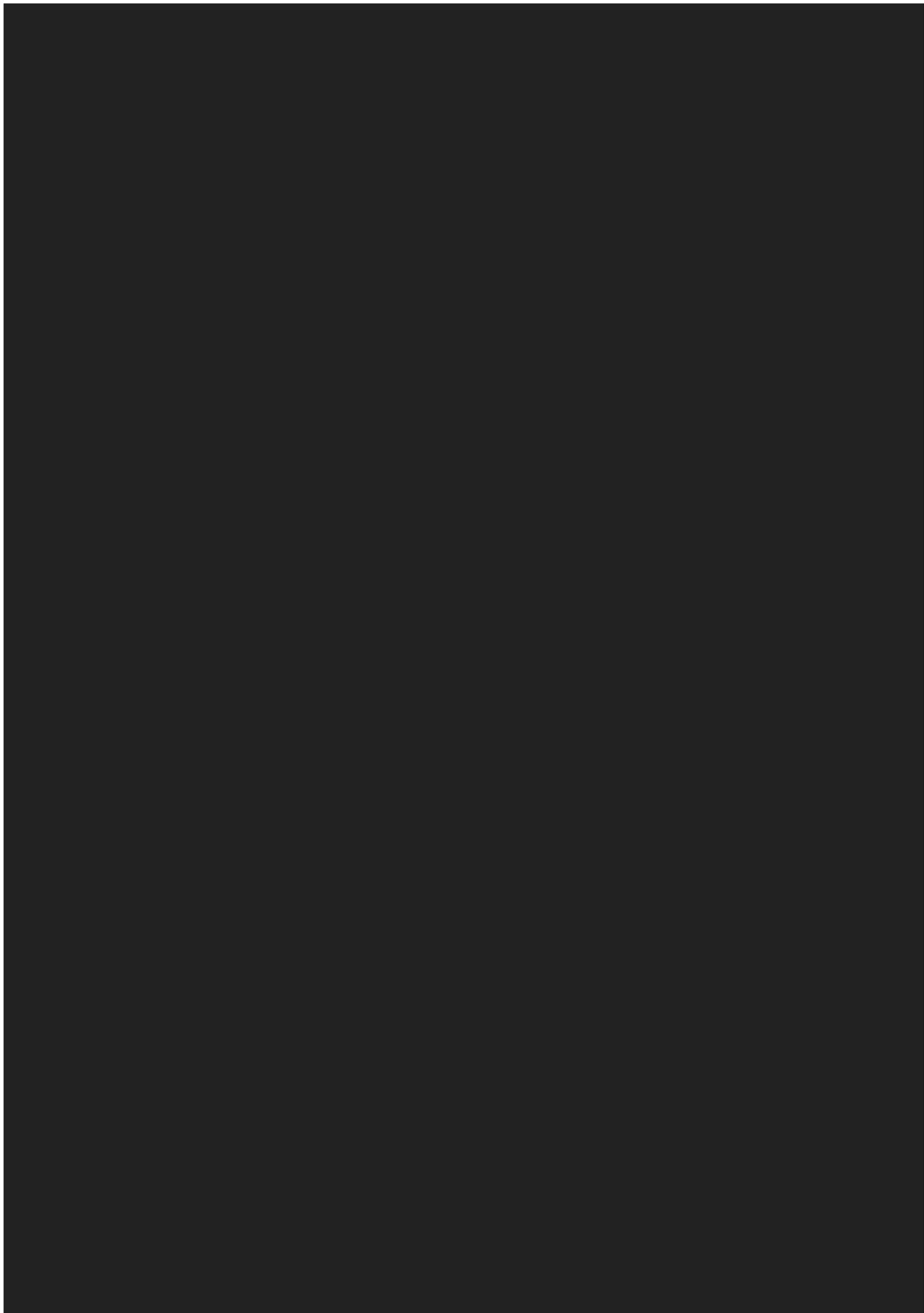
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Customer thinking on privacy in relation to smart meter data for 'public interest' use

Commissioned by Sustainability First and the Centre
for Sustainable Energy, on behalf of the Public Interest
Advisory Group

Findings from a stakeholder roundtable on 19 October 2018 to discuss the existing
customer research base

Report prepared by Ipsos MORI



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Summary and Introduction

Introduction

Ipsos MORI was commissioned by Sustainability First and the Centre for Sustainable Energy (CSE), to run an expert roundtable on 19 October 2018 to support the work of the Smart Meter Energy Data Public Interest Advisory Group (PIAG) project. This report presents a summary of the roundtable discussion.

PIAG's aims are to explore how smart meter data can be put to best use to further public policy goals and aid in the energy transition, and whether, and under what conditions, the data might be accessed by Government and other organisations for a public interest purpose while safeguarding consumers' interests.

The roundtable explored consumer perspectives on the topic of smart meter data privacy and how these perspectives might be expected to relate to 'public interest' usage of smart meter data. In the absence of funding for a large programme of new consumer-facing research, and to leverage the value of research already conducted, PIAG proposed this roundtable to access likely consumer views by discussing *existing* research-evidence with those who had commissioned or delivered relevant research studies or who have a particular public policy interest in this area.

The roundtable brought together colleagues from across the energy sector, including government, the regulator, consumer bodies, energy retail and electricity networks, commercial research agencies and universities¹. Attendees were invited due to their organisational interest in consumer experiences of smart metering. In many cases, but not all, their organisations had conducted research into consumer perspectives on smart meter data privacy, or privacy issues more broadly. The evidence presented in this report is based on a broad recollection of research findings shared verbally by the stakeholders present and so relies on what the stakeholders were aware of, or could recall, about relevant research². Prior to the roundtable, attendees received a copy of PIAG Stimulus Paper 6 on consumer research as background to the roundtable³.

¹ A list of organisations and companies attending can be found in Annex A.

² Throughout the report the attendees of the roundtable are referred to as "stakeholders" or "roundtable attendees".

³ PIAG Stimulus Paper 6; '**Consumer research on access to smart meter energy data**'. Maxine Frerk. Sustainability First. October 2018.
<https://www.smartenergydatapiag.org.uk/>

Summary

Sustainability First and the Centre for Sustainable Energy are leading a project to explore the potential to use smart meter data for 'public-interest' purpose, involving a broad stakeholder group through the smart meter data Public Interest Advisory Group (PIAG). To help understand how consumers might view such usage and the privacy implications, Ipsos MORI was asked to convene a roundtable of experts who had been involved with consumer research in related areas – or had a broad interest in these issues – to try to better understand likely consumer reactions.

Discussion at the roundtable confirmed that in terms of consumer attitudes overall there was a low level of awareness around smart meter data and energy market issues more widely. Consumers were typically disengaged and, as with other sorts of data, did not feel that they had much choice over data sharing if they wanted services delivered. That said, smart meter data was generally considered less sensitive than, for example, health or financial data.

Where consumers were likely to show concern, this linked to specific issues such as the potential for increased marketing (including targeted marketing online); safety concerns where the data might reveal patterns of behaviour, or, the potential for differential pricing. Alternatively, consumer concern might also reflect a general unease about the proliferation of data generally being shared, with people aware they didn't really know how it might be used or who else might gain access to it, including more general concerns about hacking. It was noted that little was known about the characteristics of the relatively small group of consumers who were most concerned about data sharing – and which could be a topic for further research.

Given all this, consumer attitudes to sharing their smart meter data were believed to be heavily dependent on who was gaining access for what purpose and levels of trust in those organisations. Consumers were typically focused on the benefits to themselves as individuals from sharing their data but – once it was explained to them – could also see and recognise the wider benefits to society from a more efficient energy system even if the direct personal benefits were unclear. The strongest motivator would likely be a combination of a personal and wider societal benefit.

In reflecting on the potential 'public interest' use-cases that had been developed by PIAG it was noted that while individual consumer data would be needed as an *input*, the resulting *outputs* would be aggregated or anonymised. The use of the data to improve national statistics around energy use was seen as something consumers were likely to support and which would not have negative impacts. Similarly, the use of data for modelling to inform energy policy was thought likely to be viewed positively. On the use-case for local system planning there was thought to be a risk that consumers might fear that this could lead to their area being in some way disadvantaged against others. Having a neutral third party carry out the data aggregation could help increase trust in the process.

It was acknowledged that these views on PIAG's potential 'public-interest' use-cases were judgments and that further research would be helpful in this area. However, as with all issues around smart meter data, it was noted that these were difficult issues for consumers to engage with – other than through extended deliberative sessions – and even then the results could be heavily influenced by how the issues were presented. This prompted a question around whether it was right to rely on consumer consent as the basis for accessing data in such circumstances. There was some evidence that consumers would rather government or regulators took such decisions as they would be better placed to really understand the issues.

Other areas where further research would be of value were the extent to which attitudes to gas and electricity data were different and how far historic and real-time data raise different concerns.

**Review of current evidence base
on consumer attitudes to access
to smart meter data**

Summary of roundtable review of current evidence base

One of the key objectives for the roundtable was to validate the evidence base summarised in the stimulus paper provided by Maxine Frerk, of Sustainability First⁴. During the roundtable, stakeholders were also asked to consider any consumer research they themselves had commissioned, conducted, or reviewed which explored the consumer standpoint around sharing smart meter data and any data privacy concerns. Attendees were encouraged to further test and validate the conclusions drawn in PIAG Stimulus Paper 6, including identifying any additional evidence or anything that contradicted conclusions drawn in the stimulus paper. Evidence discussed at the roundtable by stakeholders was verbal and drew largely on their recall of relevant research⁵.

Overall, evidence shared by stakeholders at the roundtable served to further reinforce the conclusions drawn in the stimulus paper. However, while stakeholders re-iterated many of its key findings, some small but important differences in the framing of the consumer research findings compared to those presented in the stimulus paper were identified:

- Stakeholders suggested that **consumers are more commonly *disengaged* with issues around smart meter data privacy, than they are 'relaxed' or 'comfortable'** about allowing it to be shared, accessed and used.
- Stakeholders recalled research studies having identified a range of concerns around the sharing of smart meter data, which included (but were not limited to), concerns around unsolicited marketing (a particular area of concern highlighted in the stimulus paper). Other issues identified in consumer research included; **a fear of differential pricing, and anxiety around the proliferation of data that is now collected and how it might be used, together with concerns about the risks of hacking**. Stakeholders agreed, however, that overall the proportion of consumers raising any of these issues in the existing body of consumer research was small.
- While stakeholders reported that in their research (or in research they were aware of), some consumers had responded positively to the articulation of societal benefits from data sharing, some stakeholders emphasised that **many consumers in practice seek an understanding of personal benefit**. Stakeholders suggested that where personal benefits are clear, this can be powerful in determining consumers' views on data sharing. However, where benefits are potentially 'system-wide', consumers may be sceptical about the scale of likely personal benefit but may still be supportive in some cases.

A number of crosscutting themes arose throughout the roundtable discussion, which centred around:

- the challenge for consumers when asked to form views on these issues given the unknown future applications of smart meter data; and,
- the low levels of knowledge consumers have around smart meters and the energy market more generally.

These factors led some stakeholders to suggest these conversations with consumers may be somewhat premature. We return to this below in presenting considerations for the research community and policymakers.

⁴ Ibid

⁵ In this sense the roundtable was not a formal or systematic review process of published research and reports.

The following section of the report expands further on these overall findings and considers what can be learned about consumer attitudes to smart meter data access for a public interest purpose. In the course of discussion, it also became evident that some evidence gaps remain; these are summarised later.

Key themes identified in stakeholder review of current evidence base

Consumers are commonly disengaged with the issue of smart meter data privacy

Stakeholders tended to be of the opinion that it is difficult to advise on how “relaxed” or “comfortable” consumers are about sharing their smart meter data (for example, with suppliers and network operators). In recalling research in this area, they felt it was more common to find that consumers are fairly disengaged, or even “indifferent”, about how and why their energy data may be used.

Stakeholders linked this disengagement, not only with smart meter data but regarding energy use and energy data more generally, to another finding across many research studies; that consumers tend to have low levels of knowledge of energy market arrangements.

These findings have a number of implications for considering how consumers may respond to public-interest applications of smart meter data:

- Stakeholders suggested that **many consumers found it difficult to distinguish between the different types of actor who may wish to access smart meter data, and to disentangle how they may feel about data privacy overall, or about a specific type of organisation.** In research to date, this challenge has been observed in consumers trying to distinguish between suppliers and network operators. Stakeholders felt this was likely to be a particular challenge as a more diverse set of organisations are discussed with consumers in relation to smart meter data access.
- According to stakeholders, **many consumers are initially cautious when they do come to understand how complex the overall energy market arrangements are and how many organisations may want access to their smart meter data.** In research to date, stakeholders reported that as consumer levels of understanding increase (i.e. as a result of being part of a research process), for some, the perceived threat may begin to rise as they recognise what half-hourly data reveals about lifestyle. However, stakeholders directly involved in delivering research fed back on their experiences of observing many consumers go on a ‘journey’ - through a heightened level of concern to ultimately feeling comfortable with a proposition that their smart meter data be shared in a variety of ways; and particularly as personal and/or system benefits are explained (as discussed further below). Overall, research in this area has shown consumer views to be open to the provision of information; and this influences levels of understanding and appreciation of risk but also benefit.
- Much like other aspects of consumer research on data sharing, stakeholders found that **some consumers remain disengaged until they feel they are given a reason to become concerned.**

For a few consumers, unsolicited marketing, differential pricing and unknown future applications for data are a concern

As discussed, many consumers express indifference about smart meter data and its applications. However, most studies recalled by roundtable attendees had identified a small group of consumers who could be characterised as 'more concerned'.

Stakeholders reported research to have shown some of the concerns held by this group of consumers to mirror general concerns around data sharing, but for there to also be specific smart meter data related concerns, such as:

- **The potential for hacking and data loss:** Similar to other types of data, stakeholders recalled research showing that a few consumers hold concerns around the potential for hacking and data loss though they do not have heightened concern as a result of the types of organisation involved in storing, transferring or accessing smart meter data specifically. In the smart meter context, consumer concern around hacking was reported by stakeholders to relate primarily to the potential for remote disconnection or home security issues.
- **A concern around smart meter data being used to increase marketing of related products and services:** According to roundtable attendees, this has registered as a concern among some consumers. Again, stakeholders reported that this concern does not tend to be specific to smart meter data, or smart related products and services, but instead reflects wider views on the value offered by tailored marketing (as opposed to the hassle created by it). Some stakeholders indicated that for some consumers this is not a major concern, or reason to refuse access to their data, for example, if they saw tailored marketing as a route to find about products and services that could be relevant and useful for them.
- **A concern that smart meter data would be used to drive differential pricing:** A number of stakeholders referred to research findings that highlighted a concern more specific to the sharing of smart meter data which was the prospect of **differential pricing**. In the research discussed, a few consumers were reported to have expressed fears that this could come into effect, for example, if suppliers elect to change peak and off-peak charges based on their more granular understanding of each household's energy use profile. In other studies, consumers had voiced fears that if more targeted investment was made in some areas of the network, this could lead to increased costs being pushed through to impact consumer bills in that area.

Roundtable attendees were also asked to consider what they recalled the evidence base to reveal about consumer attitudes to the linking of smart meter data to other datasets. In relation to data linking, stakeholders reported that:

- **Data linking is not generally a concern that consumers spontaneously raise** in the research they knew of i.e. it is a process that is rarely top of mind for consumers.
- When prompted to consider potential issues associated with data linking, stakeholders had found that **consumers can be sensitive to the potential applications for, and users of, a linked dataset**. This was suggested by attendees to particularly be the case if the linking involves data considered to be sensitive – most commonly, stakeholders reported that the research suggests consumers consider this to be health-related data, data about receipt of income benefits and financial data.
- Concerns voiced by consumers (as recalled by stakeholders) include the use of linked datasets to reduce benefit payment or impact insurance premiums.

- At a basic level, stakeholders found that **some consumers cannot comprehend how all their independent datasets may be combined and how linking could be used**. This gap in knowledge itself can heighten anxiety over data sharing and data linking.

For consumers who are concerned about data linking, stakeholders at the roundtable identified a few suggestions informed by their research about the ways in which these concerns can be minimised. These include anonymisation of the data, a focus on who is processing and using the data, adding a time-limit before data can be accessed, and articulating the benefits of linking data. For example, if an outcome of linking data is that better support can be provided to vulnerable customers, this was suggested as something likely to drive an increase in the level of acceptance.

Stakeholders reported that research they are aware of showed that **the characteristics of the concerned group are not entirely constant and do not tend to follow clear demographic lines**. The most common factor that stakeholders had identified from their research were, that those more likely to express concerns tended to be:

- less frequent users of social media;
- those who are generally quite concerned with data privacy and are cautious about sharing data; and,
- those who do not yet have (or do not know someone who has) a smart meter.

Stakeholders warned, however, that it can be difficult to unpick the views of those who already have a smart meter; they may be more open to sharing data because they understand what a smart meter does, and may have some understanding of the type of data it collects (and in some cases), the potential benefits. However, a pre-existing openness to sharing data may have been linked to them opting in the first place to receive a smart meter.

Clearly articulating the benefits of data sharing can increase customer acceptance

Research studies discussed at the roundtable had generally found that articulating a **personal benefit was powerful for consumers**. However, some stakeholders had also found that **societal benefits are generally accepted by consumers** when presented⁶ (but are less likely to be top-of-mind for consumers or to resonate as readily as direct benefits). The ideal framing of benefits was felt by some stakeholders to be when a societal benefit was also linked through to a direct or even indirect personal benefit (for example, if a local area stood to benefit in some way, and, as a resident of that local area you felt that the benefit case included you).

Stakeholders shared a view that increasing the public's understanding of the benefits around data use (for them, as well as society) can lead consumers to feel more comfortable about sharing their smart meter data in a range of circumstances (as seen with sharing other types of data).

There were felt to be challenges, however, applying these lessons when investigating the 'appeal' of smart meter data sharing for 'public interest' use-cases. Roundtable attendees generally agreed that **societal benefits can be difficult to communicate to consumers** and may be difficult for consumers to grasp. This relates back to consumers' low level of understanding of energy market arrangements; making it more difficult to explain, for example, benefits around balancing energy supply. To communicate this benefit, first consumers need to understand the different players in the energy market, then the current constraints on decision-making or information access, and finally to understand how smart meter data can be used to solve certain challenges. Seeking views on societal benefits can also require conversations of the

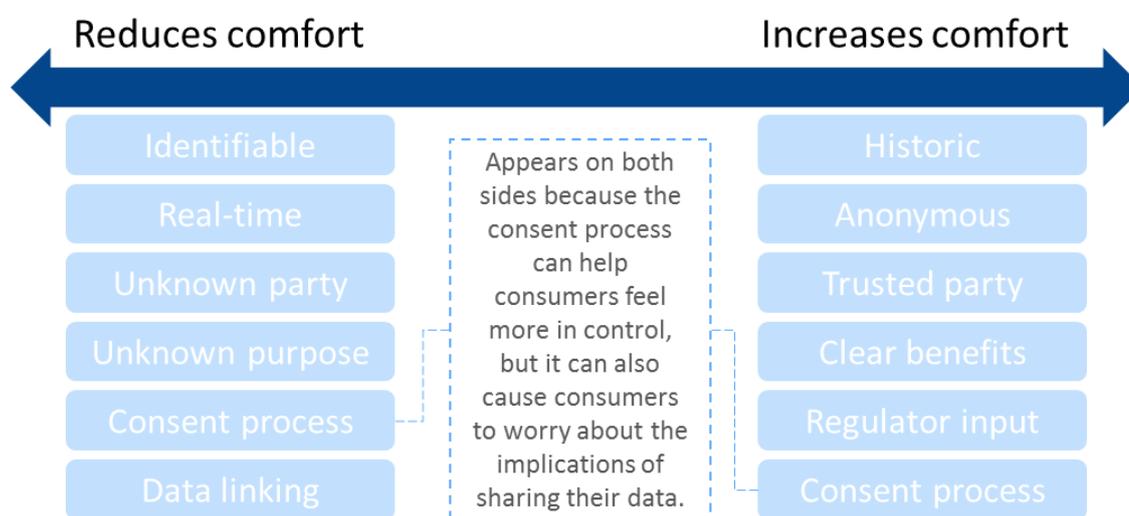
⁶ An example of this, was consumer acceptance of the DNO case for improved network planning found in the Ipsos MORI research for the ENA.

theoretical, based on possible future scenarios and uses of the data, on which roundtable attendees suggested it may also be difficult to engage consumers.

There is no clear 'redline' for consumers around data sharing, it all depends on context

PIAG is interested to understand whether there are certain types - or granularity - of smart meter data that consumers are more or less willing to share. In general, stakeholders had found levels of acceptance around data sharing to be as illustrated below; that is, **there are factors that can broadly encourage greater or lesser levels of comfort in discussions around data sharing**. However, based on the recall of roundtable attendees of research studies they had either commissioned, delivered or were aware of, there is no clear 'redline' for consumers, and often not a consistent 'redline' for any given individual consumer; instead attitudes towards the appropriate recency or granularity of data have been found to depend on who the data will be accessed by, how it will be stored and what it will be used for.

Factors in likelihood to share smart meter data



Consumer views on trusted parties and consent

As with other types of data, in their research stakeholders have found that the **party accessing and using smart meter data can impact on consumers' willingness to share that data**. Roundtable attendees believed they had seen research evidence to suggest that levels of trust among consumers may be influenced in a number of ways, including:

- **Consumer perceptions of the motivations of the recipient of the data.** For example, companies who stand to gain financially from accessing smart meter data tend to be less trusted by consumers than independent organisations. In general, attendees were of the view that consumers will tend to trust independent parties more than energy suppliers (although, some stakeholders have found some consumers to express favourable bias towards their own energy suppliers).
- **The nature of the consent process; how specific and time-bound the request is and the opportunity to withdraw:** In circumstances where consumer consent is required⁷, stakeholders reported there to be greater levels of trust if a consumer feels they are able to withdraw their consent should they wish. Stakeholders also reported having

⁷ The research discussed by stakeholders at the roundtable did not point to a clear picture on the circumstances in which consumers would, and would not, expect to be asked for their explicit consent to access their data.

found that the more specific, and time-bound the request for consent, the more comfortable consumers tend to feel. Stakeholders warned that where this could not be offered, the potential expense of future unknowns can heighten anxiety levels for consumers surrounding decisions to share smart meter data. This was recognised to raise a potential challenge where organisations seek to future-proof the consent process to cover potentially unknown future applications of smart meter data.

- **The role of regulatory bodies:** In general, and not only in relation to energy data, stakeholders reported the evidence base to show that consumers feel favourably towards the involvement of regulatory bodies to help oversee data access and usage issues. Some roundtable attendees recalled research suggesting that some consumers express a preference that the government or a regulator, or another independent body, remove the burden of responsibility from them for making decisions on data access issues and act to ensure the best interests of consumers are upheld. Attendees did, however, also caution learning from other research that some consumers remain cautious, despite regulatory involvement, based on previous experiences of companies or organisations not sticking to the prescribed rules. Additional layers of reassurance, such as through codes of conduct, or highlighting industry best practice, were reported to be further ways to increase consumer trust in granting consent to access their data.

**Factors anticipated to drive
consumer responses to 'public
interest' use-cases**

Summary of roundtable review of PIAG 'public interest' use-cases

In the second part of the roundtable, attendees discussed five 'public interest' use-cases developed by Simon Roberts and Nicky Hodges of the Centre for Sustainable Energy⁸. The use-cases were presented to stakeholders to focus the discussion. Each use-case depends upon individual customer-level 'input-data' which is turned into anonymised 'output-data' for publication (materials presented at the roundtable are provided in Annex C).

Attendees were asked to draw on their knowledge of consumer attitudes to smart meter data sharing to discuss how consumers may respond to the PIAG 'public interest' use-cases. This section of the report therefore presents stakeholder thinking on how consumers might respond to the use-cases, and what key issues could be raised by consumers. Stakeholder assumptions were based on their knowledge of the evidence base on smart meter data privacy. No specific consumer research had been conducted into consumer attitudes to these or similar 'public interest' use-cases.

The five 'public interest' use-cases presented and discussed were as follows:

- A. National and sub-national domestic sector energy statistics
- B. Local-level energy system planning
- C. Data for analysis and modelling
- D. Improved intervention targeting
- E. Service development innovation test-bed

Overall, roundtable attendees agreed with the view (expressed in PIAG working papers) that there are likely to be **different consumer privacy issues for *input data* and *output datasets***.

- In relation to *input data* (which in all the use-cases above involves access to half-hourly data at a property level) the most likely concerns among consumers were felt to be about **the security of data storage and trust in the process of aggregation, anonymisation and any linking**. Stakeholders felt it would be important for consumers to feel there was a trusted environment in which this data was held and processed – consumers were likely to look to a governmental or other independent party to do this and would expect appropriate regulatory and safeguarding controls to be in place.
- For the *output datasets*, roundtable attendees believed that concerns will arise based on what consumers may perceive the **motivations of the organisations accessing the output data** to be, and the **implications there could be from accessing the data**. The factors that stakeholders felt were likely to drive consumer reactions to the output datasets for each use-case are discussed below.

In general, stakeholders were of the opinion that use-cases A and C – the ***use of smart meter data to further improve national and sub-national domestic sector energy statistics, and for improved analysis and modelling*** - were among the

⁸ PIAG Stimulus Paper 5 : 'Public interest use-cases: data attributes, data requirements, and associated privacy and access implications'. Simon Roberts. CSE . October 2018

PIAG Stimulus Paper 4 : 'Stakeholder perspectives on smart meter energy data : and potential public interest use-cases'. Nicky Hodges. CSE. October 2018
<https://www.smartenergydatapiag.org.uk/>

least likely to raise significant concerns for consumers. Based on research with consumers on other areas of data privacy, key factors that stakeholders felt would be likely to underpin the consumer response to these use-cases were:

- **The use of smart meter data to improve something that already exists;** attendees suggested that consumers often feel more comfortable with this kind of incremental step, rather than data being used for something entirely new (this relates to fear-forming unfamiliarity).
- **The role of 'neutral' trusted organisations,** such as the ONS may reduce levels of concern. Stakeholders had found in other related research that consumers tend not to have concerns around the motivations of such organisations, as they are not, for example accessing data for financial gain or using data to market products and services.
- **Anonymisation of data;** The output dataset in use-case A only contains aggregated data, and use-case C is based on a synthetically representative dataset in which household markers have been removed – stakeholders suggested that consumers are unlikely to be concerned if it's impossible to identify an individual household.

Stakeholders at the roundtable predicted that consumers might have a greater range of queries and potential concerns in relation to use-cases B, D and E⁹. Stakeholders argued that consumers may on the one hand find it easier to engage with use-cases with local impact (i.e. personal and / or indirect benefit but locally relevant). This contrasted on the other hand with a more generalised benefit associated with national statistics – and with which consumers may not necessarily readily identify. Stakeholders predicted the following issues being raised:

- **Fairness of provision;** attendees suggested that consumers may raise concerns about the potential for smart meter data to be used to support access to services or infrastructure in some areas, over others. This was a concern held by some during Ipsos MORI's research for a DNO; respondents felt smart meter data may be used to support a case to reinforce the network in some areas over others, which could lead to inequality in the capacity of the network. In relation to use-case B in which smart meter data could be used for *local-level energy system planning*, stakeholders suggested that consumers may have concerns that this data might be used to increase access to electric vehicle charging infrastructure in affluent areas over less affluent areas – for example, if decisions on the location of this infrastructure were made based on energy load-profile data which showed more affluent areas to be in need of more charging points due to a greater prevalence of electric vehicles; resulting in an exaggeration of inequalities (indeed, this type of 'fairness' concern has been raised by respondents in similar types of research conducted for Highways England).
- **Stigmatisation of local areas;** stakeholders advised that consumers may be sensitive to use-cases which apply smart meter data to identify 'vulnerability', such as use-case D for *improved intervention targeting*. Stakeholders predicted that careful communication of the potential benefits of such an application of customer data would be needed by those interested in this use-case as wider research has found consumers can be sensitive to approaches to identify and label vulnerability: not necessarily identifying with this classification themselves or associating such a label with negative consequences for the provision of, access to, or cost of local services. Some stakeholders felt that lessons could be learned here from the issues that have been faced by suppliers and energy networks in the creation, maintenance of use of the Priority Services Register.

⁹ B - Local-level energy system planning; D - Improved intervention targeting; E: Service development innovation test-bed

- **Sharing the benefits:** Stakeholders advised that if smart meter data were to be used for what might be seen as commercial purposes, including to support the development of new services as in use-case E: *service development innovation test-bed*, then consumers may expect to see a share of the benefits and to be directly rewarded for sharing their data. Stakeholders also suggest that in the instance of use-case E, the approach may have to involve consent in order to best deliver benefits directly to consumers who share their data.

**Evidence gaps and challenges
for the research community on
'public interest' uses of smart
meter data**

Evidence gaps

Over the course of the roundtable, a number of areas were identified by stakeholders for which further evidence is needed to understand consumer views on smart meter data related privacy issues and how these may interact with potential 'public interest' use-cases.

Use of smart meter data by a wider range of public interest actors, beyond suppliers and the network: Despite discussions of trusted organisations, stakeholders suggested that one significant evidence gap was consumer attitudes towards bodies such as local authorities, academics, or community groups accessing smart meter data (most of the evidence discussed at the roundtable focused on government, supplier or DNO access to the data). Research to consider how to build trust among consumers on the use of smart meter data by such actors, and how this can be balanced against still enabling consumers to feel a sense of control, and how these actions can work in practice would be helpful.

Understanding how consumer response may evolve as applications for data evolve: Another key research area identified by stakeholders was around future applications of smart meter data. Stakeholders acknowledged that privacy concerns are likely to change over time - so what consumers agree to now may not encompass future applications of the data. Research approaches may need to ensure that evidence stays up-to-date as applications develop and consumer concerns change or evolve.

Understanding the profile of the concerned group, and what drives concerns: Stakeholders felt further research would be beneficial to understand further which groups of consumers are among the most concerned about smart meter data privacy, and why they are concerned. Much of the evidence base to date is qualitative: there is lack of robust data on the characteristics, and prevalence of this subgroup. Despite some stakeholders sharing an assumption that attitudes to smart meter data sharing, mirror attitudes and behaviours around data sharing in other contexts, overall the roundtable discussion suggested that further research, specifically related to smart meter data sharing would be of help.

How consumer attitudes vary depending on specific data accessed and used: Stakeholders would welcome better insight into how consumer attitudes might vary depending on how historic the smart meter data might be. This was felt to be particularly key given some research has shown consumers to be more comfortable sharing historic data, and which may be sufficient for many public interest purposes. Another gap to fill is whether consumers feel differently about sharing their gas as opposed to their electricity data, and what implications this may have for the energy market. While the generic concerns about use of smart meter data were likely to apply equally to both, attendees generally felt that gas usage was not as revealing of lifestyle as electricity usage (a relevant consideration for consumers).

What should become good industry practice for those processing and accessing smart meter data, and how these practices should be labelled: As noted, some stakeholders felt that a voluntary code of practice might begin to increase trust among consumers.

Communicating the applications for, and implications of, data linking: Stakeholders called for more research to understand what the specific implications of linking other datasets with smart meter data could have for individuals and households. Consumers may have difficulty understanding the process and purpose of data linking, and it would be helpful to explore how to best involve consumers in this conversation.

How best to handle consent issues: PIAG's interest was in public interest use cases which require comprehensive data and hence PIAG shared a view at the workshop that this cannot rely on consent as a route to accessing the data. Consent, was

however, a topic raised at multiple points in the workshop. Approaches to obtaining consent for other purposes were at the forefront of stakeholders' minds. It was widely agreed that this area needs far greater exploration given the challenge of obtaining informed consent in a complex topic area.

Communicating a narrative around societal benefits to consumers: Stakeholders felt that work to delve into how societal benefits of smart metering can be effectively communicated to consumers would be useful, as current research finds these benefits difficult and abstract to communicate.

Challenges for the research community

Over the course of the roundtable it was evident that, as well as evidence gaps, there are also challenges facing researchers when exploring consumers' attitudes to smart meter data privacy. These challenges have been touched on throughout this report, but primarily, they cover three broad areas;

- **It may still be 'too early' for consumers to engage fully with these issues** (although it is noted that delaying consumer engagement is not necessarily the appropriate response to this challenge);
- **In-depth qualitative research is often required** to explore consumer views, limiting what can be said in robust terms about the relevance and breakdown of views across the population;
- **Consumer viewpoints are heavily influenced by information** provided to them, as well as by personal experience and media coverage.

We are still at an early stage in consumer understanding of smart meters, their role in the energy market and the discussion of risks versus benefits: The professionals involved in the smart meter rollout have been considering the potential value - and trade-offs and concerns - associated with smart meter data for many years. But, it is still early in the overall lifetime of smart meters from a consumer perspective. Consumers, particularly those who do not yet have a smart meter themselves, may struggle to understand the potential benefits and trade-offs as these are still hypothetical. Consumers do not yet have familiarity with the potential wider applications of smart meter data. For example, how smart home appliances might collect data about them or what types of services access to smart meter data could enable. PIAG's previous work, and this expert roundtable, highlighted that there is still uncertainty around the extent of (and associated implications of) the potential applications for smart meter data among policymakers. In turn, this means one is limited at this point to having a high-level theoretical discussion with consumers.

This poses a challenge to uncovering likely consumer reactions to potential future applications of smart meter data: we know that consumer attitudes to data privacy are very dependent on the *specific* circumstances – views of the same individual vary based on precisely who is accessing data and for what. While it is never too early to engage consumers from a policy perspective, it will be significantly harder to get meaningful input when consumers are at an early stage of understanding. This needs to be considered in terms of the methodology used.

There are many challenges in exploring these issues quantitatively: So far, most of the work in this area has been qualitative. This has been necessary as a great deal of scene-setting and information-provision is needed in research upfront, as well as time to probe consumers on their views to ascertain how they have understood the issue under discussion as well as to identify what underpins their views (often one of the most important things to understand given

precise applications are not always known and if researchers/commissioners of research want to be able to judge a likely consumer view to a new application).

Quantitative research is also desirable to ascertain the prevalence of views across the population, and to understand differences by subgroup. However, there is a risk that the respondent has not received sufficient information on which to form an informed view, and it is difficult to test whether the issue in question has been interpreted as intended.

Quantitative research on these topics is also likely to generate a high level of "Don't know" or neutral responses. Where possible, it is therefore more appropriate to explore these issues qualitatively. Or, where quantitative data is needed, to run mixed-method studies e.g. to follow-up in-depth interviews with a sample of survey respondents to discuss their responses in more detail. In addition, interviewer-led surveys (either face-to-face or via telephone) are likely to be preferable to online as the interviewer can offer clarification of terms, and probe to check respondent understanding.

These issues cannot be explored in a vacuum, researchers must be alert to how they, and other factors, influence the debate: Absent specific information on the potential applications of smart meter data, or where they have no personal experience of smart meters, consumers will form views based on other information available to them. This may include, personal/hear-say experiences of hacking of other types of data, general perceptions of trust in organisations, and coverage of such issues in the media. While no different to the way people form opinions on many other topics, it is important for research to capture these 'prior experiences'/influencers to understand how and why people may form certain views - and where necessary, to disentangle views specifically about smart meter data privacy from those which are more general about the use of data in different circumstances.

The following key factors should be recognised by those reviewing the findings of research into smart meter data privacy:

- **Understanding the research sample:** Considering for example, the extent to which it reflects the general population or whether it is research based on a subset of the population (for example, smart meter households).
- **The information provided to research participants:** Stakeholders at the workshop emphasised how important the 'framing' of research questions and discussion topics can be, and the material influence this can have on the findings. People reviewing research reports should therefore check what level, and type of detail, was provided to participants and how the debate was led.
- **The wider influences on participant views:** It is helpful to consider what the research has been able to capture about the other information sources which may be shaping consumer perceptions and preferences. For example, whether participants have been exposed to negative media around smart metering, or had personal experiences of hacking.
- **The type of perspective being sought:** It is interesting to reflect on whether participants have been asked to comment on issues relating to smart meter data privacy from the perspective of a consumer (using and buying energy, interacting with companies within the energy field, using and buying energy related products) or from the perspective of a citizen (considering wider societal implications of smart meter data).

Concluding remarks

Through discussion at this roundtable, and alongside the research gaps and challenges identified, two key considerations arose for policy-makers and those seeking to influence policy on questions of access to smart meter data for a 'public interest' purpose.

First, given the acknowledged challenges in effectively engaging consumers on these issues, some stakeholders felt that policy-makers may need to consider whether and / or how far it is appropriate to place the burden upon the individual customer for taking responsibility for privacy decisions relating to access to smart meter data for a 'public interest' or a regulated purpose. Roundtable attendees reported that many consumers themselves sometimes express a desire for these decisions to be taken for them – wanting to place responsibility on the appropriate authority to make such decisions on their behalf about what is best.

Second, stakeholders emphasised that consumers do not tend to see their energy data (even granular and recent data) to be that sensitive – at least not in comparison to other types of data they know are already held about them, e.g. financial data, household data, or health data. Some stakeholders were therefore of a view that there is a risk that consumers are being encouraged to have a debate on this issue when perhaps they do not have concerns. Many have found consumers to ask "should I be concerned?", and given the complexities involved in judging the benefits of allowing access to their smart meter data, consumers are only able to comment on a part of the debate.

Annexes

Annex A

List of organisations attending the Expert Roundtable on 19 October 2018

We would like to thank everyone who was able to attend and contribute to these discussions.

BEIS (Department for Business, Energy and Industrial Strategy)

MHCLG (Ministry for Housing, Communities and Local Government)

Ofgem

Citizens Advice

Which?

Energy-UK

E.ON

Smart Energy GB

Energy Systems Catapult

Northern Powergrid

Energy Networks Association

techUK

Smart Energy GB

UCL SMRP (University College London. Smart Meter Research Portal project)

UK Energy Research Centre

University of Cardiff

Britain Thinks

Impact Research

UK Statistics Authority

Ombudsman Services

Doteveryone

City University

Ipsos MORI

CSE

Sustainability First

Annex B

Hypotheses tested during the roundtable

Four hypotheses were posed to the expert stakeholders during the roundtable. While based on some of the broad conclusions drawn in PIAG Stimulus Paper 6¹⁰, these hypotheses were drafted purely to use as a tool to encourage debate and discussion.

Testing hypotheses 1 (H1): Most customers are relatively relaxed about smart meter data being shared with suppliers and network operators.

Testing hypotheses 2 (H2): The biggest concerns around smart meter data privacy is that the data might be used for marketing, creating more hassle for customers.

Testing hypotheses 3 (H3): Acceptance of sharing smart meter data is higher when the benefits to the customer are clearly articulated (including societal benefits).

Testing hypotheses 4 (H4): Consumers are more nervous about providing access to their smart meter data if it is likely to be combined with other types of personal data held about themselves or their household.

Summary of key conclusions against each hypothesis

The first hypothesis tested was "*most customers are relatively relaxed about smart meter data being shared with suppliers and network operators*". This received general agreement at the roundtable, however the largest point of disagreement was the term "relaxed". Many stakeholders felt that consumers are largely disengaged rather than "relaxed" about sharing their smart meter data.

The next hypothesis tested was "the biggest concerns around smart meter data privacy is that the data might be used for marketing, creating more hassle for customers". This too received general agreement from roundtable attendees. However, most suggested this concern is one among many, rather than the primary concern.

The third hypothesis discussed was "acceptance of sharing smart meter data is higher when the benefits to the customer are clearly articulated (including societal benefits)". Again, this hypothesis was generally agreed at the roundtable. The stakeholders emphasised the impact of both personal and societal benefits as being important in the narrative to consumers.

The final hypothesis discussed was "consumers are more nervous about providing access to their smart meter data if it is likely to be combined with other types of personal data held about themselves or their household". Overall, roundtable attendees agreed that data linking was a concern, however they stressed that many consumers are unaware of what data linking might mean in practice and find the concept difficult.

¹⁰ PIAG Stimulus Paper 6 ; 'Consumer research on access to smart meter energy data'. Maxine Frerk. Sustainability First. October 2018.

<https://www.smartenergydatapiag.org.uk/>

Annex C

Use-cases presented during the roundtable

Use case A: National and sub-national domestic sector energy statistics




<p>Overall aim: Improve detail available in national and sub-national statistics about domestic energy consumption</p>	<p>Current situation/Issue: Official statistics use annual consumption records for each household aggregated from individual meter readings. Based on 'dumb meters' and only using a single 'annual' consumption figure; estimated reads are assumed 'same as previous year'.</p>	<p>Benefits:</p> <ul style="list-style-type: none"> Reduce delays in availability of statistics Improve detail of statistics e.g. <ul style="list-style-type: none"> wider range of typical daily profiles peak demand for electricity & heat level of export from domestic generation 	<p>Privacy issues:</p> <ul style="list-style-type: none"> INPUT: Property level & half hourly data. OUTPUT: Aggregated data spatially & temporally – impossible to identify any individual record 	<p>Real world example: Modernisation of Digest of UK Energy Statistics (DUKES) and Energy Consumption in the UK - creating datasets more suited for informing decision making in a future more flexible energy system.</p>
<p>Potential users of dataset: Government, ONS, DNOs, academics</p>				

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Use case B: Local-level energy system planning




<p>Overall aim: Establish a detailed picture of local energy systems and fine-grain patterns of energy supply and demand within it.</p>	<p>Current situation/Issue:</p> <ul style="list-style-type: none"> NEED local authority consumption tables report mean/median electricity and gas consumption by property / household dimensions (eg floor area, tenure, property age) for each local authority It is based on a sample for England and Wales / all households in Scotland and uses valid annual consumption data joined with data from other sources. It is not granular enough to support effective local system planning. 	<p>Benefits:</p> <ul style="list-style-type: none"> Better infrastructure planning e.g. to install heat networks, EV charging points Design & targeting of more effective local interventions Monitoring impact of local low carbon housing refurbishment schemes Improve system efficiency e.g. by balancing local supply & demand 	<p>Privacy issues:</p> <ul style="list-style-type: none"> INPUT: Property level & half hourly data INPUT: Non-domestic data, generation/supply data, network data, EV charging etc. LINKED TO: Socio-demographic & building datasets OUTPUT: Annual dataset with half-hourly data aggregation to street / feeder level 	<p>Real world example: Electric vehicle infrastructure planning – by local councils & DNOs</p> <ul style="list-style-type: none"> Spotting charging patterns for electric vehicles by locality, will enable DNOs to better predict when surges on the network will occur and plan for network reinforcements where they are most needed. Local-level energy data, when matched with electric vehicle uptake, will help councils to plan where electric charging points are most needed, and allocate where electric-vehicle only parking spaces should exist.
<p>Potential users of dataset: Local Authorities, DNOs, community interest groups</p>				

Use case C: Data for analysis and modelling

Overall aim: Provide finer grain energy data alongside other household attributes to improve quality of data analysis, modelling and research which supports policy-making

Current situation/Issue:

Current analysis is constrained by spatial and temporal granularity of accessible data

Benefits: Improve understanding of ...

- Energy use in different types of households / dwelling types
- Potential distributional impacts of policy and market changes
- Monitoring & evaluation of policy impacts

Potential users of dataset:

Government, ONS, Committee on Climate Change, academics

Privacy issues:

- INPUT: Property level & half-hourly data over a year
- LINKED TO: Socio-demographic & building data at individual property/household level
- OUTPUT: Synthetic representative dataset (individual records anonymised by removing geographical marker – akin to English Housing Survey approach)

Real world example:

Enhancement of the National Energy Efficiency Data-Framework (NEED)

NEED matches annual gas and electricity consumption data with information on energy efficiency measures and data on property attributes and household characteristics.

Monitoring the effectiveness of government energy efficiency programmes

Understanding the distributional impact of new policies

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Use case D: Improved intervention targeting

Overall aim: Support the targeting and approach to delivery of planned interventions.

Potential users of dataset:

Public, regulated or voluntary sector (wide-ranging from LEPs, to third parties working with DNOs or suppliers)

Current situation/Issue:

Current analysis of needs of local areas is constrained by spatial and temporal granularity of accessible data

Benefits:

- Provide insight into energy performance of buildings in specific localities
- More accurate and cost-effective targeting of interventions e.g. through identifying fuel poverty hotspots
- Inform approach to delivery of planned interventions

Privacy issues:

- Anonymised experimental representative dataset that corresponds to the geography of interest (eg derived from dataset for use case 2).
- Household consent should be required to access individual household's smart meter data to support improved delivery of services.

Real world example:

Design and targeting of local authority run scheme to tackle fuel poverty, such as where to roll-out energy efficiency measures scheme.

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Use case E: *Service development innovation test-bed*



Overall aim:

Development and/or provision of services aiming to deliver a personal benefit to individuals / households which contribute public co-benefits eg towards carbon reduction targets

Current situation/Issue:

Current service design is constrained by spatial and temporal granularity of available data.

Potential users of dataset:

Service developers: commercial or non-profit enterprises / start-ups.

Benefits:

- Testing of algorithms underpinning service design
- Examination of potential for unintended negative impacts for some potential customers
- Improved quality of products and services
- Lower cost of innovation

Privacy issues:

- Anonymised experimental representative dataset that corresponds to the variables of interest (e.g. derived from dataset for use case C).
- Household consent should be required to access individual household's smart meter data to support improved delivery of services.

Real world example:

Development of peer to peer trading services.

Access to this data would help developers test out different tariff options or peer to peer business models to suit different household's energy use profiles.

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