Smart Meter Energy Data:

Public Interest Advisory Group

A policy dialogue and work programme

led by

Centre for Sustainable Energy & Sustainability First

ANNEX to PIAG Final Report:

Summary of PIAG Project Papers – Phase 1

Author: Kieran Dodds, Sustainability First

Annex Status

A short summary of all PIAG Stimulus and other project papers in PIAG Phase 1.
Please refer to each paper for full material.

Annex to PIAG Final Report : Summary of PIAG Project Papers – Phase 1

Contents

Introduction

Sustainability First

Sustainability First is an environmental think-tank and charity, rooted in experience, with a clear commitment to promoting long-term sustainability through practical thought-leadership. Sustainability First works in the fields of sustainability policy and practice for energy, water supply, and water management. In particular, Sustainability First promotes a 'public interest' agenda in the energy and water sectors, economic regulation and sustainability duties, innovation and how this can better serve sustainability, and the social justice aspects of sustainability including fair treatment for consumers and citizens in vulnerable situations.

Centre for Sustainable Energy

The Centre for Sustainable Energy (CSE) is an independent national charity that works for a world where sustainability is second nature, carbon emissions have been cut to safe levels, and fuel poverty has been replaced by energy justice. Based in Bristol, CSE undertakes practical work to support individuals, communities, and organisations to take action on energy. CSE shares knowledge and experience to empower people to change the way they think and act about energy by giving advice, managing innovative energy projects, training and supporting others to act, and undertaking research and policy analysis.

Smart meter energy data Public Interest Advisory Group

Working together, and with funding from relevant players across the sector, Sustainability First and CSE have established the smart meter energy data Public Interest Advisory Group (PIAG). This has brought together a broad range of public interest stakeholders to consider 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 public interest purposes while safeguarding consumers' interests**, including on privacy.

Sustainability First and CSE have published a series of stimulus papers, research notes and presentations as background for the PIAG workshops and to support the policy dialogue. These papers have set out clearly the varying stakeholder perspectives on smart meter energy data, including, in a report prepared by Ipsos MORI, on consumer thinking in relation to data privacy. In turn, CSE has developed some **key public interest data 'use-case' archetypes** for the PIAG project. These include: improved national energy statistics; better data to support regional and local-level planning; better data to allow policy-makers to model the impacts of new policies; and service innovation and development. Provided customer privacy concerns can be satisfactorily addressed, significant benefits could be delivered from the use of smart meter consumption data for such public interest purposes.

Across PIAG project papers, Sustainability First / CSE have set out a **suggested framework** to explore routes for accessing customer smart meter data for a public interest purpose. Noting that the UK faces a particular challenge in that it has no single database of smart meter data, the papers therefore identify a number of **potential sources for customer-level input data**, including suppliers, distribution networks, the settlement system, and new parties. Were this input data to be suitably **anonymised and aggregated through a 'trusted processor'**, the PIAG work has shown there is the potential for a range of public interest applications, from national energy statistics, to better local infrastructure planning, to more targeted interventions for customers in vulnerable circumstances.

This annex to the final report brings together the output of the previous PIAG project papers, summarising their findings and outlining some practical, public interest applications for policy-makers and other stakeholders.

Members of PIAG as at June 2019 are:

BEIS; Citizen's Advice; Committee on Climate Change; MHCLG (Ministry of Housing, Communities and Local Government); Energy Networks Association; Energy UK; Energy Saving Trust; Energy Systems Catapult*****; Elexon*****; Electralink; Greater London Authority; National Grid ESO*****; National Infrastructure Commission; Northern Powergrid*****; Ofgem*****; Office for National Statistics; Ombudsman Services; Scottish Government; Smart DCC (Smart Data Communications Company)*****; Smart Energy GB; TechUK; Welsh Government; Which?; UK Statistics Authority; Cambridge Architecture Research Ltd; University of Edinburgh / Teddinet; UCL Smart Energy Research Lab*****; University of Exeter; University of Reading; UKERC; Xoserve; Centre for Sustainable Energy; Sustainability First.

*****- denotes funding partner

Smart meter energy data Public Interest Advisory Group papers - Phase 1

Public Interest Advisory Group papers available at **https://www.smartenergydatapiag.org.uk/**	
Kick-off stimulus paper	**Initial Meeting – 30 November 2017** Maxine Frerk, Sustainability First Judith Ward, Sustainability First Simon Roberts, CSE
Working Note	**Clarifying what smart meter data could add to the public interest: public interest questions to frame PIAG's work** Judith Ward
Stimulus paper 1	**Background to ICO Guidance on anonymisation and annex on data access privacy legal framework** Maxine Frerk
Stimulus paper 2	**International experience – smart meter data access** Maxine Frerk
Stimulus paper 3	**Data ethics – a review of the landscape** Maxine Frerk
Stimulus paper 4	**Stakeholder perspectives on smart meter energy data and potential public interest use-cases** Nicky Hodges, CSE
Stimulus paper 5	**Public interest use-cases: data attributes, data requirements, and associated privacy and access implications** Simon Roberts
Stimulus paper 6	**Consumer research on access to smart meter energy data** Maxine Frerk
Ipsos MORI research report	**Customer thinking on privacy in relation to smart meter data for 'public interest' use** Ipsos MORI
Stimulus paper 7	**Possible routes to smart meter data for public interest uses** Maxine Frerk
Stimulus paper 8	**Capability requirements of public interest data user organisations** Nicky Hodges
PIAG final report	**Final Report – Phase 1.** **7 June 2019** Maxine Frerk
Annex to PIAG final report	**Summary of PIAG project papers in Phase 1** Kieran Dodds, Sustainability First

Kick-off stimulus paper

Background

The Sustainability First and Centre for Sustainable Energy smart meter energy data Public Interest Advisory Group held its initial meeting on 30 November 2017. This coincided with the publication of a 'kick-off' paper to spur discussion during the first of four all-day public interest stakeholder workshops. The kick-off stimulus paper set out the aims and objectives of the project, outlined the context in which the project was taking place, and sketched out some work programme themes it was envisioned PIAG would cover.

Aims and objectives

The aims and objectives of PIAG have remained consistent throughout the project's lifespan. Fundamentally, PIAG has sought to **bring together a range of relevant public interest stakeholders** to hold an **informed and structured policy dialogue** to explore how household smart meter energy data could be: put to appropriate use to **better serve GB policy development and energy system transition**; and **accessed for purposes of public policy** by government and other organisations able to demonstrate a strong public interest remit.

Under this overarching aim, the paper sets out a series of targeted objectives for the project: to provide an **independently-convened public interest view-point and platform** across several stakeholder workshops; to consider how public interest concerns are reflected in the **current and evolving alternative routes for third party access**; to develop deeper understanding and ensure a **high-quality debate on public interest benefits** associated with smart meter energy data among key stakeholders; and to develop and agree some **high-level principles** by which to test appropriate public interest uses of smart meter data.

Work programme themes

The paper further sets out three broad themes to be covered by PIAG, within which are a number of sub-themes and associated debates. PIAG would explore, first, the **interests of different public interest actors** and stakeholders in smart meter energy data. This would include cataloguing the different data requirements of various stakeholders, assessing how such data may be accessed, and understanding the research priorities of these stakeholders from a public interest point of view.

PIAG's second theme, **data properties and the public interest**, would consider how different properties of smart meter data could impact the public interest value of that data, including how far desired data properties might raise or address privacy concerns. This in turn raised questions about historic vs. real-time data, gas vs. electricity data, the appropriate levels of locational and socio-economic data, and data linking and how this might serve the public interest.

Third, PIAG would explore **data access and the public interest**, namely where and where not current smart meter data access arrangements and future proposals were likely to serve the public interest. This would involve considering how far current regulatory arrangements could facilitate or hinder data access, possible obstacles to access and how these may be overcome, and also any public policy interventions that may ultimately be required.

Project context

The kick-off paper further noted the context in which these matters were being considered, most notably, of course, the **smart meter roll-out**, but also the ongoing UCL **Smart Meter Research Portal**[1] project, the BEIS **Data Access and Privacy Framework** (DAPF) review, smart meter data access for the **settlement reform programme**, and more broadly the UK Government's focus on the potential uses of '**big data**'. All of PIAG's subsequent output has been delivered with these important developments and projects firmly in mind.

[1] Now the UCL Smart Energy Research Lab.

Working note: Clarifying what smart meter data could add to the public interest: public interest questions to frame PIAG's work

Why enable access to smart meter data for a public interest purpose?

Prior to publication of the first stimulus paper, the PIAG published a working note which sets out the case for accessing smart meter data. Specifically, it outlines the main public interest outcome sought by the project: '**a better energy end-use evidence base** able to **serve wider societal goals** at a national and a local level – by enabling and supporting **improvements in research, analysis, prediction, evaluation and targeting of public policy**'.

What does a public interest purpose look like?

Such improvements may be realised at both the national level and the regional or local levels.

Nationally, the PIAG would explore how smart meter data might lead to **improved models** and therefore **improved forecasting**, and investigate the potential positive consequences of improved end-use data such as better **inputs to whole-system thinking**, better grasp of policies' **distributional impacts**, and better **targeted public policy**.

At the **regional or local level**, smart meter data could be harnessed for better informed **investment** as a result of a clearer view of the **needs of local communities**. There ought also to be a clear public policy benefit for **local and regional authorities**, especially in the design of energy-related **infrastructure and low carbon** measures, as well as targeting of services to **different population segments** such as the elderly or fuel-poor.

Public interest questions to frame PIAG's work

These examples indicate how rather than a single and simple definition of the 'public interest', the PIAG sought to adopt a **process** for thinking about smart meter energy data and how it best could be harnessed. It was recognised that any such process must seek to **understand in depth** the public interest on smart meter data access as well as **balance different legitimate interests**. As part of this process, 12 questions guided the PIAG's early thinking:

1. How to get a better view of **customer-thinking on trade-offs** between privacy, data access and the public interest.
2. What are the **main 'public interest' purposes** for accessing smart meter data?
3. Do we understand the **main data characteristics** likely to facilitate these public interest purposes?
4. From a privacy viewpoint, do we also understand which data characteristics critically impact the **data sensitivity**?
5. From a 'public interest' stand-point, can some purposes for data-access be ruled **'out of scope'**?

6. **Which actors** are the most likely to seek access to smart meter data for a public interest purpose – and chiefly for **what purpose**? From the view-point of a public interest benefit, can some actors or some purposes be prioritised over others?
7. What are the **most likely routes** open to those actors who seek access to customer smart meter data for public interest purposes?
8. Under present rules, how far can 'public interest' actors **already fairly readily access** smart meter data – and whether at reasonable cost?
9. What are appropriate **data-handling capabilities** for such actors?
10. Whether key public interest purposes are at risk of remaining unserved without **additional steps** in support of data-access. Do we understand the main enablers and barriers?
11. Can we identify potential **additional risk to the customer** (individual, collectively) and should current thinking on data-access arrangements evolve for 'public interest' reasons?
12. Do we understand what **distributional impacts** – or unintended consequences – might arise with better access for public policy purposes to end-use energy data from smart meters?

Stimulus paper 1: Background to ICO Guidance on anonymisation and annex on data access privacy legal framework

An overview of anonymisation guidance

Stimulus paper 1 provides both some background to the guidance provided around anonymisation and an overview of the current legislative framework around data access, each of these clearly crucial considerations for the PIAG project. The paper notes that it is the **General Data Protection Regulation** (GDPR) and the **DAPF** which govern smart meter data access in the UK, the former of which is overseen by the **Information Commissioner's Office** (ICO).

In 2012, the ICO produced a code of practice[2] for managing data protection risk through anonymisation in which it sets out how '**anonymisation can allow us to make information derived from personal data available in a form that is rich and usable, whilst protecting individual data subjects**'. Stimulus paper 1 is clear that this is a premise which underpins the PIAG; this has remained consistent throughout the PIAG project, as demonstrated by its ultimate recommendation that sensitive input data be anonymised and aggregated by a 'trusted processor'.

Key considerations

The paper then sets out some of the key considerations in anonymising data to ensure that privacy is maintained and individuals are not identified. It outlines the ICO's **motivated intruder test**, different **forms of anonymisation**, namely **pseudonymisation** and **aggregation**; the distinction between **publication** and **limited disclosure**, with the risks of the former clearly higher; **practicalities around consent**, which is not needed to legitimise anonymisation of data but should be sought where there is risk of re-identification; the use of **trusted third parties** such as the PIAG's recommended 'trusted processor', which can be used to convert personal data into anonymised output data; and certain **other risk considerations**.

Legislative framework

The paper places these considerations in the context of the UK's existing legislative framework through annexes which clearly explain the principles laid out in the Data Protection Act 2018 (DPA) and GDPR, and the DAPF. In particular, it draws attention to the relevant guidance around consent, data portability, and pseudonymisation. A second annex looks at the **Digital Economy Act 2017** (DEA) and the opportunities this allows a) for **researchers to access greater amounts of data**, b) for better **data linking and sharing**, and c) the power for the **Office for National Statistics** (ONS) to access greater amounts of data (from public and private sector bodies) where this fulfils one of its statutory functions.

[2] ICO, 'Anonymisation: managing data protection risk code of practice', available at https://ico.org.uk/media/for-organisations/documents/1061/anonymisation-code.pdf.

Stimulus paper 2: International experience – smart meter data access

UK smart metering in the international context

Stimulus paper 2 provides a number of **international case studies** into smart meter data access and asks how lessons from other countries can be applied in the UK. In particular, it explores how third parties might be able to harness smart meter data for commercial applications and – especially in the case of researchers, policy-makers and government – for public interest purposes. While the UK smart metering programme was 'leading edge' in its initial formulation, it has not yet been able to provide such access. However, other countries are looking to do so.

US and Canada

The paper looks in some detail at the **US 'Green Button' initiative**. Launched under the presidency of Barack Obama, the initiative has sought to enable utility customers to share their energy usage information in order to manage their use and save on bills. Data from the Green Button initiative is in a **common format**, enabling third parties such as software developers to best make use of it. The costs of providing Green Button services are **borne by the utility provider** themselves, which further encourages third party data usage. As a result, the initiative has had significant take-up and has therefore achieved a high profile; the paper notes that there has been no similar 'champion' for third party access to smart meter data in the UK.

Stimulus paper 2 also outlines similar initiatives rolled out across North America. It refers to the **Illinois** anonymised data service, which permits third parties to access individual half-hourly smart meter data on an anonymised basis by postcode. In **California**, legislation has been introduced requiring utilities to provide access to energy usage and usage-related data to state legislators, academic researchers, and local government, while also protecting consumer privacy through, for example, aggregating monthly consumption data. The Pecan Street Project in **Austin, Texas** is a particularly ambitious example involving the capture of minute-by-minute electricity data which is then shared internationally and at no cost to academic researchers. The paper also cites the example of **Ontario**, where consultations were ongoing on the provision of de-identified half-hourly smart meter data to government, academics, and private industry looking to develop new applications.

Europe and the rest of the world

The paper notes that the picture is more mixed across Europe and that the **approaches taken tend to differ between European Union member states**. However, the experience of Europe as a whole has been that there is much less emphasis on the potential usage of smart meter energy data by third parties and / or the effectiveness of arrangements for third party access, this despite high-level EU guidance covering consumers sharing their information with third parties. This appears to be similar to the situation in **Australia and New Zealand**, where official policy indicates that smart meter data should be made available to the customer and third parties with customer consent.

Stimulus paper 3: Data ethics – a review of the landscape

'Privacy' vs. 'data ethics'

Consumer privacy has rightly been a major concern throughout the UK smart meter roll-out. Stimulus paper 3 however introduces a wider debate around data ethics and the new challenges associated with the growth of AI, big data, and data linking. It notes that that even where data is anonymised, there is a risk that individuals may be re-identified in cases where sufficient safeguards have not been put in place. In particular, it proposes some 'early-stage thinking' around **the potential for a principles-based approach to smart meter data**, bearing in mind feedback from PIAG workshop participants that one should not look to 'reinvent the wheel'.

Stimulus paper 3 lays out some of the possible implications for PIAG of such an approach. It argues that **data ethics need to be taken into account in addition to the more conventional framing around privacy** as laid out in the DAPF; that half-hourly data when used in combination with big data could reveal additional insights; that a data governance framework could possibly be created covering both recruitment and data, with external scrutiny built in so as to increase public trust; and that data outside the 'walled garden', despite being more sensitive, is not subject to any specific controls, and therefore PIAG could argue for principles to be agreed governing use of more granular (eg 10 second) smart meter data collected through CADs (Consumer Access Devices).

Data ethics, AI, and 'big data'

The paper proceeds to explore the range of organisations – both in the UK and internationally – which are engaged in issues around the governance of data. In the UK specifically, the Government has announced the creation of a **Centre for Data Ethics and Innovation** under the remit of the Department for Digital, Culture, Media and Sport. Alongside this, bodies such as the **Royal Society** and the **British Academy**, the **Royal Statistical Society**, and the **Alan Turing Institute** are all involved in projects aimed at mapping out best practice for the handling and sharing of data and resolving the ethical and social tensions thrown up by the rapid growth of AI and associated technologies.

Additionally, these organisations are working together in partnership with the **Nuffield Foundation** through the **Ada Lovelace Institute**, a research body with the mission of representing the interests of wider society in debates on ethical data use at a national and international level, as well as promoting and support a common set of data practices that are deserving of trust, and are understandable, challengeable and accountable.

Case study: data ethics in healthcare

Data ethics in healthcare is an especially valuable case study for the PIAG project given the sensitivity of the individual data involved and the recent ambitious plans to roll-out programmes such as **Care.data**, which sought to pool GP patient data into one central database governed by NHS Digital. Care.data was ultimately closed down largely due to privacy concerns. A formal review of the programme had advised of the importance of clear opt-outs and the need for widespread public engagement around security in order to better build trust. More needed to have been done to communicate with patients precisely how their data would be used and the basis on which they could opt-out of the scheme.

Subsequent healthcare data projects like the **Understanding Patient Data Taskforce** have stressed the need to be more mindful of these concerns. Such lessons are clearly valuable to those looking to innovate in the smart meter data space, especially given the similar levels of media scrutiny.

Social research ethics

Stimulus paper also 3 sets out the existing governance arrangements for social research in the EU and the UK. Where this research involves sensitive data, organisations such as the UK Administrative Data Research Network stress the need for '**safe data**' as well as **safe people**, **safe projects**, and **secure environments**; that is, data ought to be de-identified (and the risk of re-identification borne in mind) and researchers ought to be trained on the proper use of people's personal data.

Stimulus paper 4: Stakeholder perspectives on smart meter energy data and potential public interest use-cases

Gathering stakeholder perspectives for use-case development

Stimulus paper 4 is the output of a series of background interviews carried out with a range of public interest stakeholders in order to capture their views of the potential public interest uses of smart meter data and their awareness and perspectives of associated approaches to data privacy and data access for smart meter data. 12 public interest stakeholders were interviewed in the first half of 2018 and asked questions around: **policy goals** or strategic priorities to which smart meter data uses could contribute; **specific potential use-cases** of smart meter data; **data requirements and potential barriers** to data access and development of use cases; and privacy, ethics and public trust issues, including the fit with the wider smart meter rollout.

There was a relatively strong consensus on the policy goals smart meter data usage could support. These included: **tackling fuel poverty**; more **efficient balancing** of the grid and enabling a smarter more integrated energy system; **decarbonisation** through monitoring progress, investment planning, and more accurate measurement of the real-life impact of energy efficiency; promoting **economic growth** by informing infrastructure investment decisions; and a range of **public health benefits** in enabling cold homes safeguarding and prevention measures.

Developing the public interest use-cases

These strategic priorities subsequently informed the development of PIAG's six high-level archetype public interest use-cases for smart meter energy data as set out in the paper:

- **National and sub-national domestic sector energy statistics;**
- **Local-level energy system planning (for infrastructure and intervention planning and monitoring);**
- **Data for analysis and modelling to support policy-making, research and insights (e.g. household energy use, distributional impacts, policy impact evaluation, etc.);**
- **Improved intervention design and testing, e.g. to tackle fuel poverty**
- **Local electricity system 'live' monitoring to trigger reactions/interventions in real time;**
- **Service innovation and development and testing of early stage design/algorithms, etc.**

These use-cases are explored in some detail in the paper, including their various data requirements and the potential barriers for accessing this data, including **capacity issues** among stakeholders and the possible **ethical and public trust issues** considered in stimulus paper 3. These themes are further built upon in the next output of the PIAG project, stimulus paper 5, which looks at the associated implications of these public interest use-cases and the steps one would need to take to realise their benefits while safeguarding individual privacy and maintaining consumer trust.

Stimulus paper 5: Public interest use-cases: data attributes, data requirements, and associated privacy and access implications

Defining the public interest use-cases

In examining what data PIAG's public interest use-case archetypes would need, stimulus paper 5 analyses five further issues: the **attributes of the smart meter data** required to serve the use-case, including spatial and temporal resolution and frequency of data capture; **the attributes of any other data** (such as building data, socio-demographic data, other energy data, etc.) that would be required alongside the smart meter data to meet each use-case; the **data access, analysis and processing requirements** to prepare the dataset required for each use-case; **the attributes of the dataset that would need to be made available to users** in each case; and the extent to which the necessary dataset to deliver each use-case might risk **compromising consumer privacy**.

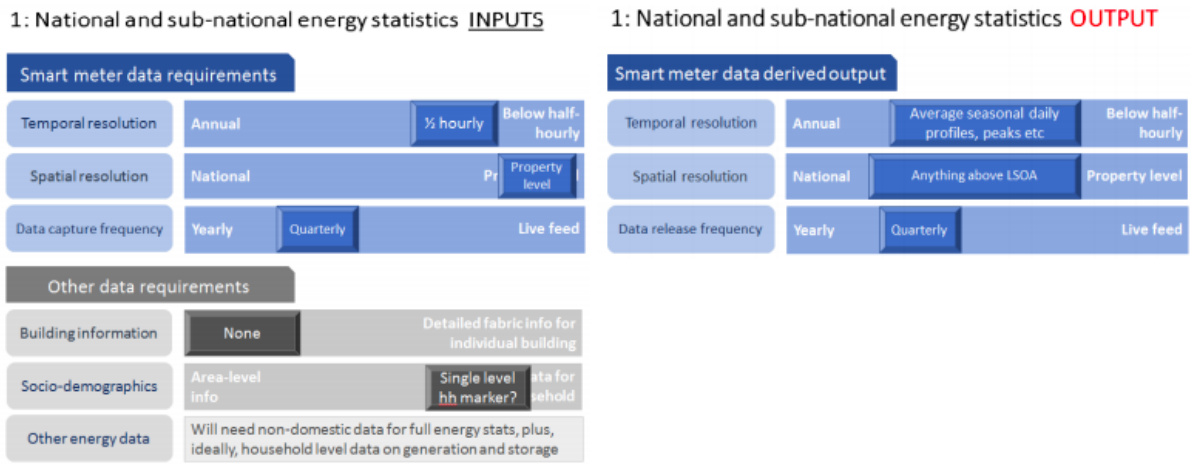
Input/output data and the role of the 'trusted processor'

Crucially, the paper observes that there is **no single smart meter database** available in the UK, and that identifying options for sources of input data is key. The paper also concludes that a '**trusted processor**' is needed to securely capture, curate, process, and analyse individual smart meter data. Stimulus paper 5 also makes the important distinction between the individual-level **input data** and the subsequent **output data** – de-identified and therefore not representing a privacy risk – that would be needed for the archetype public interest use-cases.

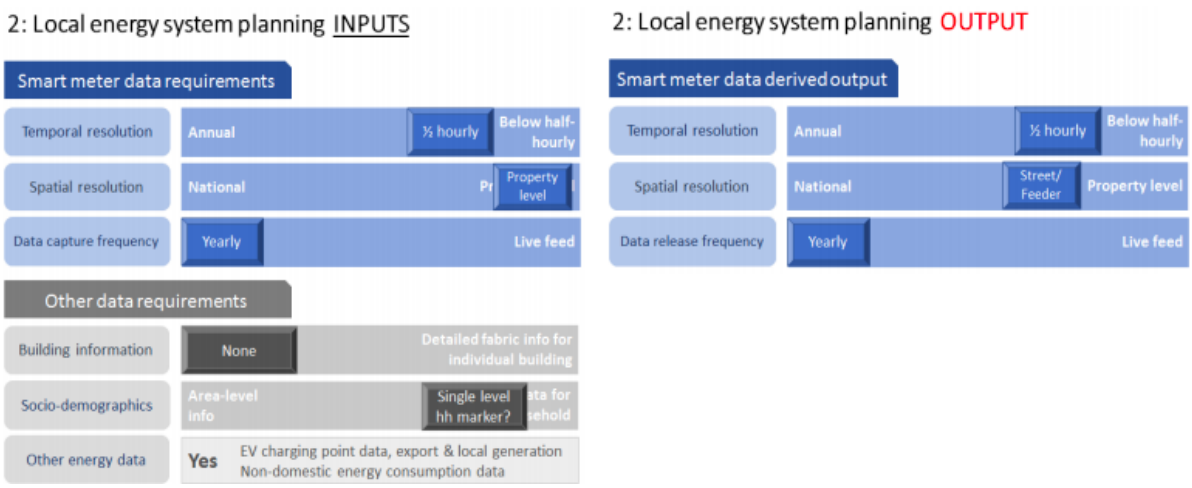
Use-case data requirements

Stimulus paper 5 provides a detailed outline of the types of data attributes required to serve each of the six use-cases. It notes that the three key dimensions of smart meter data are its **temporal resolution**, ranging from a single annual figure (kWh or peak kW demand) to half-hourly or less; its **spatial resolution**, ranging from national level down to individual property level; and the **data capture frequency**, ranging from yearly down to a live feed of real-time data.

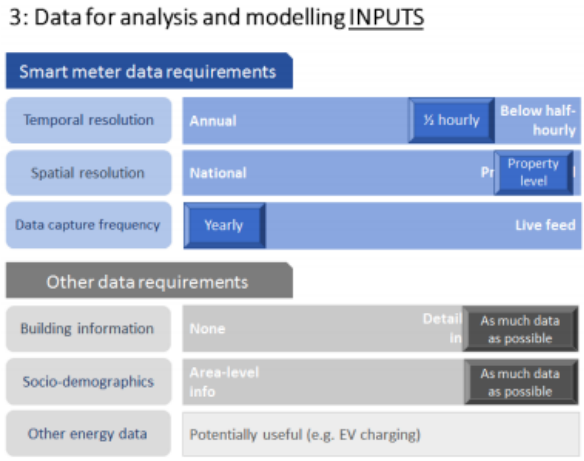
To realise **use-case 1** and improve national and sub-national domestic energy statistics datasets in order to better understand demand and consumption, and therefore to potentially improve public policy, the paper finds the following data requirements:

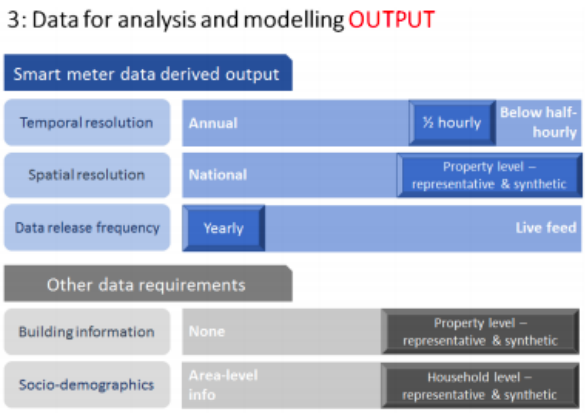


For **use-case 2**, enabling local actors such as policy-makers and communities to better understand and plan their local energy systems, input and output data would have to match these attributes:



The realisation of **use-case 3**, providing combined finer grain energy data to policy-makers for analysis and modelling, would require the following:





The paper concludes that **use-case 4** – the use of an individual household's smart meter data to support improved delivery of services to that household – should **require the household's consent**, but also that the design and targeting of these services could be improved through the use of datasets produced for other use-cases, specifically the local dataset output from use-case 2 and the nationally representative dataset from use-case 3.

Stimulus paper 5 also recommends that use-cases 5 and 6 be taken no further. In the case of **use-case 5**, while public interest stakeholders were keen to access 'live' data for their local electricity system, smart meters will not routinely collect such data, and so the kinds of interventions set out in the use-case will not be realisable through smart meter data usage. Similarly, the paper finds no public interest argument for **use-case 6**, the imposition of a service development innovation test-bed on consumers, without securing a household's consent.

Stimulus paper 6: Consumer research on access to smart meter energy data

Smart meter data specific research

Stimulus paper 6 provides an overview of the available consumer research carried out into individuals' attitudes towards smart meter data and associated privacy implications. It also goes on to identify evidence gaps where further research is required with regard to data access for a public interest purpose. The headline findings from an analysis of published research conducted by Ofgem, Ipsos MORI, Citizens Advice, Smart Energy GB, and BEIS respectively are listed in the paper, and these include:

- **Most consumers are relatively relaxed** about smart meter data being shared with suppliers and network operators, but **a small minority are very concerned**, even where data is anonymised and aggregated.
- Concerns are greater when **more granular data** is being shared.
- Where it can be **explained clearly what benefits the data delivers** (to society and ideally the customer directly), there is much more acceptance.
- Similarly, **once the settlement process was explained**, customers were **generally comfortable with their half-hourly energy consumption being used** for that purpose.
- Compared to other data, **energy usage data is not seen as particularly sensitive**.
- More generally, there would seem to **be a general acceptance that government should be able to access at least aggregated data** to help in planning the energy system.

Wider consumer attitudes to data

The paper goes on to explore how individuals feel about data privacy more generally, citing research conducted by Which?, the Royal Society and the British Academy, and Ipsos MORI. Consumers may be said to have a **low awareness** of the scale of personal data collection and are **concerned once this is explained**, although individuals may be '**rationally disengaged**' in that they feel there is nothing they can do to change these practices and have to accept them if they want to use the services. In addition, there is support for **greater regulation** of the data ecosystem.

Evidence gaps

Stimulus paper 6 also finds some evidence gaps in this current body of research, citing three areas that are particularly important for the PIAG project:

- Whether consumers feel any differently about their **gas consumption data** rather than electricity (given the latter potentially reveals more about patterns of usage).
- Research into **consumer attitudes towards different public policy uses** of smart meter data and towards different public policy actors.
- The **circumstances** under which consumers would be willing to share their smart meter data with public interest groups.

Ipsos MORI research report: Customer thinking on privacy in relation to smart meter data for 'public interest' use

Stakeholder roundtable on consumer research

In order to help fill some of the evidence gaps identified and to explore further likely consumer attitudes to the sharing of this data for public policy purposes, Sustainability First and CSE commissioned Ipsos MORI to bring together a group of expert stakeholders, most of whom had been involved in commissioning consumer research on these privacy issues. The aim was to explore with them likely consumer attitudes.

Challenges for the research community

Building on the identified evidence gaps, stakeholders recognised some further challenges for researchers looking into consumer attitudes to smart meter data privacy:

- Some felt that it may still be **'too early'** for consumers to engage fully with these issues; however, it was also 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, but this also presents a number of specific challenges, especially in determining the breakdown of views across the population.
- Consumer viewpoints were also observed to be heavily influenced by the **information provided** to them, as well as by **personal experience and media coverage**.

Initial conclusions on consumer thinking

During the roundtable, it was felt by stakeholders that consumers do not tend to view their energy data – even more granular data – as particularly sensitive in comparison with other types of personal data such as health or financial information. It was acknowledged that these were complex issues for consumers to grasp and that policy-makers should not necessarily expect to rely on consumer consent for access to data where there are wider public benefits at stake which policy-makers will be better placed to judge.

Stimulus paper 7: Possible routes to the data for a public interest purpose

Potential sources of input data

The penultimate PIAG stimulus paper 7 sketches out a suggested **framework and strawman process to access smart meter data for a public interest purpose**. First, it sets out the different potential sources of the individual, granular household-level data required, given, as has been noted, the lack of a single UK smart meter energy database. The paper identified **suppliers, distribution networks, the settlement system,** and possibly **new parties** as those best positioned to play this role given that the first three of these all already have access to consumer data, albeit at varying levels of granularity.

Anonymisation and aggregation

The strawman process proposes that this input data then be **anonymised and aggregated securely through a trusted processor** as set out in figure 1 below.

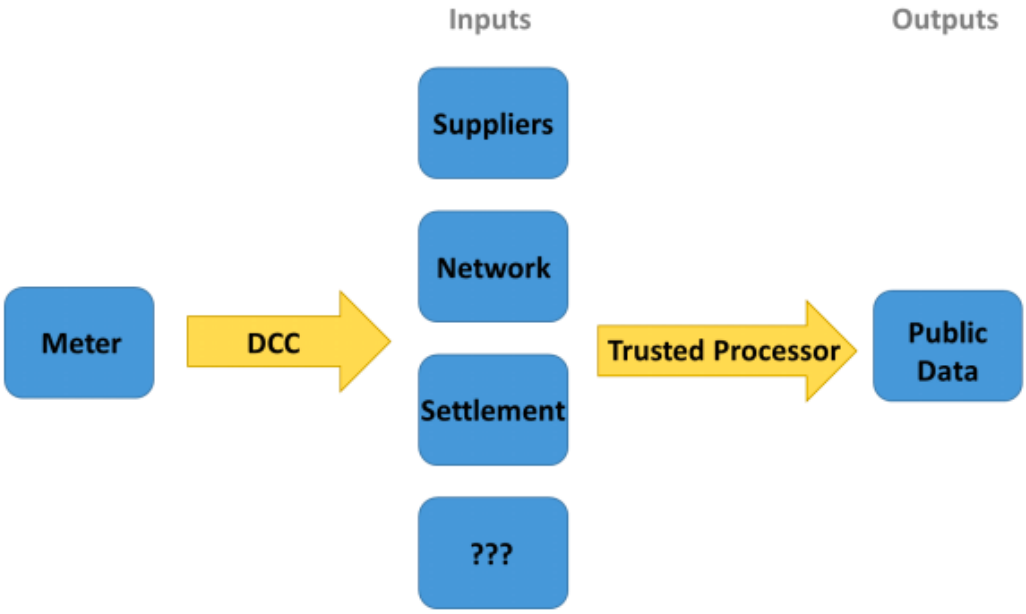


Figure 1 – A strawman process to access smart-meter data for a public-interest purpose
Source : CSE & Sustainability First

The paper notes that two regulated bodies already act as a trusted processor for data in the UK, namely the **UK Data Archive** and the **Office for National Statistics** (ONS). Importantly, the ONS already has the power under the DEA to request private company data for public interest purposes. The ONS is perhaps therefore in a position to play a role as the smart meter energy data trusted processor if it can demonstrate that the data would be securely aggregated with no risk of re-identification. The DEA also ultimately allows for other bodies to be accredited as data processors, which remains another option.

Stimulus paper 7 also suggests some possible **high-level criteria** by which one might assess potential routes to the data: **complexity, current data availability, comprehensive coverage longer-term, cost, legal basis, capability,** and **consumer confidence**. In addition to these criteria, PIAG stakeholders suggested considering **coherence and interoperability** and **future-proofing or future-enabling**.

Early thoughts on some possible routes to the data

The paper sets out some early thoughts on possible routes to smart meter energy data for a public interest purpose, with these early indications divided into the shorter- and longer-term. In the **short term**, the paper argues that **suppliers** could continue to be a source of granular input data for national energy statistics, as per the current arrangements, while the **ONS** under the DEA could also take on the role of data collection for statistical purposes from the energy suppliers on behalf of BEIS.

In the **medium term**, it is suggested that **electricity distribution networks or the settlement system** may potentially become a more comprehensive source of customer consumption or other energy data. However, this would come with the limitation that it does not provide a route for gas data, absent further developments.

In the **long-term**, stimulus paper 7 argues that for multiple 'regulated' uses of smart meter data, there may be a case for the **new bespoke route of a single data hub and a trusted processor arrangement.** This could take the form of new obligations placed on DNOs and GDNs to provide smart meter consumption data, or it could involve new obligations being placed on the settlement system, system operator, the DCC, or the ONS to provide finer grain input data. However, it is acknowledged that **this would require statutory and licence changes** and would be a significant step.

Stimulus paper 8: Capability requirements of public interest data users

Stakeholder capacity

Stimulus paper 8 draws on the stakeholder interviews of paper 4 and the use-cases identified in paper 5 in order to identify the **level of resource and capability an organisation would require to access and use anonymised output smart meter datasets**. Of these stakeholders:

- **Elected city bodies** manage large and sensitive data sets and could better aid and influence the energy transition with access to smart meter data, but city stakeholders also identified that energy and environment sectors 'lagged behind' in engagement with the 'smart cities' agenda compared to health, education, and transport sectors.
- **Other public bodies** noted the lack of a 'data-driven culture' and the need for technical support to use smart meter data effectively, as well as resource and specialist skill constraints.
- **New entrants** felt themselves to be disadvantaged compared to incumbents by their inability to access smart meter data.

The paper therefore notes that there is 'a **mixed picture** in terms of resource, will, culture, technical capability and financial capacity among "public interest" users of smart meter data', but also that there is a **large and significant body of potential public interest users**: government departments, statutory and non-statutory advisory bodies, regional bodies, local authorities, community energy organisations, intermediary energy organisations, research bodies, housing associations, and new entrants wishing to develop new services.

Organisational capability, knowledge, skills and technology requirements

The organisational capabilities required by organisations using smart meter data are summarised in the paper. Those that wish to access and utilise the data outputs effectively must demonstrate in their organisations **an enabling culture, governance capabilities, legal compliance, collaboration, personnel with appropriate skills, decision-making quality,** and **appropriate technical infrastructure**. These qualities are reflected in the thinking of smart city, open data, and big data agendas around how organisations can use data for the public good; the qualities are also in large part transferable to the smart meter energy data space.

In addition to these more generic capabilities, and especially for use-cases requiring larger anonymised output smart meter datasets, further skills are likely to be required. These range from **statistical and energy system knowledge and modelling** to **data management and analysis tools** and **research and evaluation skills**. The paper further notes that for more advanced uses of the data, while specific capability requirements will vary, the **scale** of the data inputs and the **complexity** of the approach are the most relevant dimensions to consider.

Importantly, **smart meter data is not observed to be 'inherently special'** with regard to the skills and capabilities it requires in order to be accessed and utilised effectively, **nor is it 'necessarily "big"** in the context of the conventional discourse of "big data".' Indeed, the PIAG's **trusted processor** role would remove the need for some of the work normally associated with data processing through generating smaller, anonymised outputs to the public interest users of the data. The paper therefore concludes that '**there is nothing specific to smart meter data that is likely to create obstacles to success**', albeit the exact technological and analytical requirements will of course depend on the specific use-case.