



Ofgem Call for Input

Data Sharing in a Digital Future: Consumer Consent

Centre for Net Zero Response

Sent by email to: digitalisation@ofgem.gov.uk

Introduction

Centre for Net Zero (CNZ) is part of the world-leading group of organisations that comprise Octopus Energy Group. We leverage the global Octopus Energy customer dataset for modelling and research purposes. We are an autonomous, non-for-profit organisation that delivers pioneering research to transform future energy systems.

Our access to tens of billions of customer data points gives us an unparalleled insight into the behaviours of people and businesses around the world. CNZ analyses this dataset in depth, runs field trials and experimentation, and builds cutting-edge AI models and tools to generate novel data and insights about the active participation of people in the future energy system.

We use our research to influence the key decisions of governments, policy-makers and grid operators, promoting the acceleration of the energy transition at low cost. We take a whole-systems view, considering demand as well as supply, and helping design an increasingly automated energy system with flexibility at its centre.

We have focused our response to align with the core areas of our research, and where we can most add value to this area. We are happy to discuss our response, and share any further information directly.

1. Do you agree that a Consumer Consent solution is required as per the taskforce's recommendation?

CNZ agrees, in principle, that consumers will need to give, manage, and revoke consent to share their energy data with an increasing number of energy sector actors. It is, of course, essential to have transparency over data with robust consent processes. Consumers must see who has access to their data and why, which is crucial to engender public trust and protect consumers. They should be able to opt in or out access to their assets and easily switch between suppliers and flexibility providers, which may operate different technologies in a home. We agree with Ofgem that the energy industry can learn from the successes of other sectors, especially Open Banking.

We do not have a view on the specific options presented for a consumer consent solution - whether a centralised technical solution, centrally-set code, or industry-led standards. However, we would agree with the challenges of a centralised technical solution identified by Ofgem and others, which may be very lengthy to develop, costly and increase cyber security risks.

We would also challenge the presumption that the ultimate aim should be as wide as possible access to consumer's consumption data, and encourage careful scrutiny of which parties need access to personal data, when. Clearly, we need to take privacy risks seriously. There is an established body of literature on how household characteristics could be inferred from smart meter data which suggests smart meter data contain many hidden signatures particular to households.¹ Furthermore, it should be noted that, even accepting the treatment of aggregated smart meter data as presumed open, GDPR principles, security controls and technical barriers may still limit the ability of networks to share data information with other organisations.

Our core recommendation is that Ofgem considers the huge potential of AI-generated synthetic data to unlock demand-side data without risking personal privacy or waiting for lengthy centralised solutions. Synthetic datasets can provide realistic profiles for each consumer archetype that cannot be attributed to individuals. We believe this can reduce the need to access raw smart meter data. We should not let obstacles to obtaining real data become a barrier where synthetic data could be used by a range of parties more safely and easily - with the potential to scale far more quickly.

We anticipate synthetic data can be used by innovators to develop new products, services and business models, or by grid operators to plan a more efficient, low-cost system. We plan to ideate use cases for synthetic data further, including:

- Designing smart tariffs or innovative new products
- Greenfield grid design
- Regional, national and global grid “digital twins”
- Future energy system simulations
- Extreme weather resilience planning
- Scenario planning

CNZ's generative AI model, *Faraday*, is trained on Octopus Energy smart meter data to provide realistic synthetic profiles for each consumer archetype that cannot be attributed to individuals.² It provides load profiles of half-hourly kWh consumption for user-specified inputs, e.g. low carbon technology, property type and season. It simulates the entire distribution of load profiles of that population instead of a point estimate. *Faraday* is already being used by a number of alpha testers in research:

- TEED Digitisation Project by University of Birmingham
- Better Home Leeds Project by ARUP
- Commercial research projects by industry consultancies such as Parity Projects and Turley
- Other academic research projects by PhDs and Postdocs from University of Manchester and King's College London.

¹ Beckel, C. *et al.* (2014) “Revealing household characteristics from smart meter data,” *Energy (Oxford, England)*, 78, pp. 397–410. doi: 10.1016/j.energy.2014.10.025; Radovanovic, D. *et al.* (2022) “How unique is weekly smart meter data?,” *Energy Informatics*, 5(S1). doi: 10.1186/s42162-022-00205-8.

² <https://www.centrefornetzero.org/work/faraday-electricity-consumption-profiles/>

Faraday is not a commercial product. We believe that synthetic data can be shared with third parties, while models can also be used to train their own proprietary data to produce more synthetic data. Opening up access to synthetic data generation tools will help synthetic smart meter data to be generated at scale. We would like to work towards consensus of what “good” looks like for synthetic smart meter data, ensuring quality and privacy, and ensuring it can scale quickly. We plan to create an open synthetic data community to facilitate the sharing of data, models, and algorithms - this has been accepted by Linux Foundation Energy.³ We will publish further information of our plans shortly, including proposals to evaluate the fidelity, utility and privacy of synthetic data in an energy context.

We thank Ofgem for the engagement we have to date regarding synthetic data and look forward to discussing this further in future.

2. Could you please provide any reasons why the current methods for obtaining consent from a consumer might be ineffective or inefficient?

Many organisations have been building the case for change in the way we use smart meter data to unlock innovation and drive system change. We broadly agree with the core issues identified by the Energy Digitalisation Taskforce and others. Fundamentally, the incentives, capabilities and governance in place across the energy sector do not promote the use of smart meter data to its full potential. There is limited incentive to share data beyond what is absolutely required, and arrangements do not reflect the urgency required of the energy transition. As noted above, however, we should be mindful that GDPR principles, security controls and technical barriers are likely to continue to be a challenge around data-sharing.

3. Do you believe that consumers are sufficiently motivated to engage with the consent solutions proposed in this Call for Input? Please elaborate on your answer.

Not currently, but this is highly contingent on the customer journey design as well as broader trends in energy and technology.

Firstly, we should not underestimate the impact that well-designed systems can have on how consumers engage. Behavioural research overwhelmingly reveals the primacy of environmental factors - consumers are influenced by what is easy, available, normal, timely, affordable, and the default choice.⁴ This means an easy process with clarity as to what their data is being used for and why, while emphasising the benefits it can bring in savings, comfort and convenience. They also need to be confident in their data privacy, with the right consumer protection frameworks in place as suppliers and flexibility providers increasingly manage energy data on customers' behalf.

³ <https://github.com/lf-energy/tac/issues/68>

⁴ For example, such research underpins the Behavioural Insights Team's EAST Framework, <https://www.bi.team/publications/east-four-simple-ways-to-apply-behavioural-insights/>

Of course, we should also consider that consumers are not homogenous. Services can be designed with different consumers in mind, and the risks of digital exclusion are well established. However, system impacts can come from a large proportion of consumers participating, rather than full engagement from all consumer types. For example, recent innovative trials such as the ESO's Demand Flexibility Service have shown the grid-scale impact that interventions can have by engaging only a proportion of consumers. We should also consider where the data we have is "good enough" for specific use cases - for example, the use of synthetic data where alternatives are not available.

Finally, we should ensure we are planning for the energy system of the future, in which we can expect consumer behaviours and motivations to change over time. For example, we cannot attribute a lack of consumer engagement to a technical consent process, without considering fundamental features of the energy system driving behaviour. For example, as flexibility becomes increasingly important in an energy system powered by intermittent renewables, and innovative low carbon technologies make it far easier for consumers, participation in flexibility markets and services should increase - largely managed by suppliers and aggregators on customers' behalf. We can expect it to become easier and more attractive to optimise energy consumption in future - and therefore make use of energy data - to save individual households and drive down system costs.

We should therefore consider the whole system when thinking about issues such as consumer consent. It cannot be removed from fundamental changes required to transition to a clean, low-cost energy system, such as:

- redesigning electricity markets to maximise the use of renewable energy assets and demand flexibility, with sharper price or carbon signals in both location and time.
- accelerating the adoption of low-carbon technologies (e.g. EV chargers, heat pumps or solar panels, batteries) which make it easier for consumers to participate in energy markets and services. This should include policies which encourage pairing adoption of technologies with smart tariffs.
- policies to develop the consumer proposition for demand flexibility. As one example, CNZ's *Smart Building Rating* aims to measure and value flexibility at household-level for a range of use cases: raising consumer awareness, financing "smart home" upgrades, accelerating technology adoption.⁵

⁵ <https://www.centrefornetzero.org/work/smart-building-rating/>



4. Do you agree that the four use cases referenced are high priority use cases? Can you describe any other high priority use cases?

Not answered.

5. Do you believe that a new Consumer Consent solution would enable the improvements to the energy system described in the four use cases? If not, could you please elaborate

Not answered.

6. Do you agree with our method and scoring of options?

Not answered.

7. Which of the options referenced in this chapter do you believe would be the most appropriate Consumer Consent solution, for the industry, the government, and the consumer?

Not answered

8. Please can you explain why you chose a specific option? Do you have any suggestions on how to improve this option?

Not answered.

9. What barriers do you see to the successful implementation of a new consent solution?

Not answered.

10. What do you think are the roles of Ofgem, industry and other stakeholders in enabling a simple and effective consent solution?

Not answered.