

Response to a Smart, Flexible Energy System

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Context

In the UK and Ireland, Baxi Heating has a portfolio of some of the best known and most respected brands in the heating industry. We provide integrated solutions for domestic and commercial heating and hot water including boilers, electric water heating, solar thermal, combined heat and power, controls and digital applications. We have a proud history of UK manufacturing and have been producing high efficiency heating and hot water solutions for over 150 years.

With particular regard to this consultation we have a portfolio of home heating and hot water products either in development, or nearing market, which offer connected functionality and the potential to offer “behind the meter” demand side response. With this in mind our response is restricted to the questions posed regarding smart appliances.

Consultation Questions

28. Do you agree with the 4 principles for smart appliances set out above (interoperability, data privacy, grid security, energy consumption)?

Energy consumption:

No, we believe energy consumption to be a negligible principle in the context of what we are aiming to achieve. The benefits of smart services should far outweigh any additional energy consumption from devices remaining in stand-by or “listening mode”.

The Ecodesign preparatory study for smart appliances concludes ‘*the surplus consumption is considered to be negligible*’. We agree with the point that ‘*the end-user should be compensated for this surplus energy consumption with an acceptable margin that still lies within the surplus added value of providing the extra flexibility*’. Therefore any small consumption difference would be considered in the value proposition to the customer.

Interoperability:

Open data standards will be an essential ingredient for mass roll out. Given the range of consumer appliances that will be connected to the C-HAN it is imperative that open data standards are the basis for interaction to ensure a competitive market, otherwise there is a risk that consumers would be locked in to a single manufacturer, or software provider, closed protocol. “Open data standards” are standards that ensure interoperability and data exchange across different products, potentially using different communication protocols and methods of communication.

We agree there should be no mandate on communication infrastructure: Communication can be routed in a number of different ways, with or without the need of a bridging gateway (in case of differing communication protocols).

This is important not only for the UK and EU standards framework but is a global concern given the wide range of product groups and manufacturers involved.

Data Privacy:

Robust privacy rules will be a key factor to ensure consumer engagement. Usage data is valuable to manufacturers for quality and continuous improvement processes, and is needed to offer certain connected service propositions, therefore informed consent is required from the consumer.

Grid Security:

To assist in peak demand shaving, devices will need to communicate to facilitate a two way flow of information for demand forecasting and remote turndown on TOU tariffs where appropriate. This does not provide a direct safeguard for the grid itself and it is still imperative that investment in generation capacity and distribution continues to support increased demand, however using smart meter data this should be much easier to quantify.

29. What evidence do you have in favour of or against any of the options set out to incentivise/ensure that these principles are followed?

- **Option A: Smart appliance labelling**
- **Option B: Regulate smart appliances**
- **Option C: Require appliances to be smart**

At this point we believe it is not feasible to support the principles outlined, but Option A, B or C may be suitable for different smart appliances in the future.

- Insufficient information exists on the value for consumers to support a labelling scheme
- Without a clear value proposition it is not feasible to introduce any form of product regulation and especially to ban non-smart appliances from the market which is what we interpret option C indicate.
- Different appliances may in the future benefit from any of the above options. Below we outline the need to further breakdown the list of appliances in Q30 and evaluate their ability to provide flexibility and therefore pass on value to the consumer.

30. Do you have any evidence to support actions focused on any particular category of appliance?

- **Heating, ventilation and air conditioning**

There are already a large number of domestic energy storage appliances installed in the UK in the form of thermal storage water heaters. This is a readily available, affordable and relatively widely used technology that could be easily adapted for smart grid control. Control systems already exist to provide this function and have been demonstrated in small scale field trials. However, hot water storage products are not routinely supplied “smart grid enabled” at present, mainly due to lack of market requirement. The infrastructure and incentives for consumers do not exist for the technology so consumers would be unwilling to pay the additional cost of such controls. The technology will only become mainstream and affordable in the mass market if it is either legislated for or there is a mechanism that gives consumers lower running costs to incentivise uptake.

Consideration would also need to be given to consumer choice and comfort. A smart grid connected DHW vessel must always give the consumer hot water at times they want/need it. Acceptance will be low if energy input is always determined by the grid as this may lead to consumers not having enough hot water, or a sufficiently quick recovery time at some periods.

Furthermore, integrated thermal storage could also be used to reduce peak demand on the gas grid by incentivising top up during periods of low demand. With appropriate smart controls this could be enabled though TOU tariffs.

31. Are there any other barriers or risks to the uptake of smart appliances in addition to those already identified?

Consumer perception, understanding and readiness to accept "smart" functions will be key considerations. We see consumer acceptance as one of the four main barriers to the adoption of smart devices for heating and hot water, together with interoperability, privacy and security, which have been mentioned previously.

We believe that, once the operating methodology with regard to grid communications and the consumer proposition is fully defined, a wide reaching and impartial awareness campaign will be necessary.

Building upon the smart meter roll out, a clear and easy to grasp narrative geared towards consumers will be essential, with accompanying use cases and relatable case studies.

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