

Call for Input: The Future of Distributed Flexibility – HWA Response

Section 1

1. What do you think distributed flexibility could contribute to the energy system?

Distributed flexibility will be vital in facilitating the electrification of sectors of the UK energy system. It is unlikely that in the short to medium term there will sufficient generation to meet demand. There is also the significant issue of renewable energy curtailment, costing the UK billions annually. We need a functioning distributed system set up as soon as viable to maximise the opportunities of a flexible and interconnected system.

2. Will a focus on CER flexibility also help enable other forms of flexibility, especially distributed flexibility?

We believe that CER flexibility will be key to enabling other forms of flexibility. We have conducted in depth research into the role that hot water cylinders (HWC) could play in providing CER flexibility.

Cylinders can shift 23GWh of energy demand to off-peak electricity times. The demand turn up available from cylinders equals ~26GW. This is due to the large number of fossil fuel systems incorporating a hot water storage cylinder with an electric immersion heater element. However, for this amount of energy to be shifted there need to be changes in the electricity market to enable CER flexibility models and products and to maximise potential savings. These are complex and involve a number of actors that do not normally interact, such as product manufacturers and network companies or aggregators. There is a role for Ofgem to develop the future of distributed flexibility.

Section 2

3. Is there a 'case for change' and a need for a common vision for distributed flexibility?

For HWCs to be used in flexibility markets there needs to be clear communications between the stakeholders below. If an aggregator wants to respond to a market signal, the energy provider needs to ensure this will not make them out of balance. The grid operator also needs to know that the asset has correctly responded and has turned down demand at the correct time. As more aggregators start bidding in the market the communication between these different actors needs to become transparent. Currently it is not.

Home energy management is also likely to be a key theme of our future homes, driven in part by the recent spike in energy prices. Some companies already offer cylinders which are compatible with solar PV, but further interoperability may be encouraged to ensure optimal flow of energy within the home. Interoperability of communications could also allow consumer facing apps to provide insights to customers. Increased engagement with these apps could lead to greater savings.

4. What is your vision for how to accelerate the delivery of accessible, coordinated and trusted markets for distributed flexibility?

We believe there are a number of actions that could be taken to accelerate delivery across the supply chain.

We should adopt learnings from the European SRI initiative by giving an uplift to a new build's SAP / EPC rating if a product in the dwelling has smart controls. Similarly, SAP should be more dynamic and reflective of carbon intensities of electricity consumption at different times of the day. Having smart controls and storage capabilities which push consumption to off peak should be represented by an improvement in the dwellings SAP rating.

Similar to new builds, learnings could be adopted from the European SRI initiative for including smart controls in the RDSAP calculation. Whole system approaches could be taken to retrofitting old heating systems. Including retention of a hot water cylinder when replacing a boiler could be incentivised through grants or subsidies.

Encouraging the energy system in the UK to move to true half hourly settlement would encourage more dynamic tariffs in the market. This would allow residential assets such as cylinders to access greater value from their tariffs. Reducing taxes and levies on off peak electricity would encourage more value to be captured from cylinders shifting demand.

Standardisation of communications between different players (aggregators, network companies, energy retailers) is needed to remove barriers to residential assets, such as HWCs, from participating in flexibility services. Standardisation of protocols for controls would also facilitate easier interoperability of HWCs with a range of heating and home energy management systems.

5. Will certainty of an end vision help accelerate enabling work and make it cohesive?

We agree with this to an extent. An end vision can be helpful. However, it is not binding and therefore uncertainty will remain on how it will be delivered and to what timescale.

Any end vision needs to be accompanied by a delivery plan that outlines key milestones that industry can use to assist product development and R&D planning.

6. When should a common digital energy infrastructure be in place? And therefore, when should development begin?

In theory it needs to be developed asap. We are aware of work DESNZ are doing around smart interoperability and around creating universal protocols for car charging and heating infrastructure. We would be concerned if that work and other work around a common digital energy infrastructure was conducted in isolation. It also needs to be scalable and appropriate. Industry is concerned that government and the regulator could dictate a solution that minimises competition and locks in certain technology and cost.

Section 3

7. What should a common energy digital infrastructure look like, and why? Please consider the archetypes or develop your own proposition.

8. What is your view on the desirability and feasibility of the archetypes or your own alternative proposition?

Section 4

9. Should a common digital energy infrastructure be new-build, or should it build-out from existing infrastructure?

10. What are the important areas for consideration when designing institutional delivery models for a common digital energy infrastructure?

It is critical to have standardisation of communications between different players (aggregators, network companies, energy retailers) is needed to remove barriers to residential assets, such as HWCs, from participating in flexibility services.

Standardisation of protocols for controls would also facilitate easier interoperability of HWCs with a range of heating and home energy management systems.

11. What are the important areas for consideration when designing financial delivery models for a common digital energy infrastructure?

Both DNOs and the TSO procure flexibility to balance supply and demand on the network and to ease congestion. They will be a key provider of value for HWCs participating in flexibility. They have an obligation to customers to provide these services as cheap as possible, meaning innovative solutions such as HWC will be considered.