

NATIONAL INFRASTRUCTURE COMMISSION CALL FOR EVIDENCE: Electricity interconnection and storage



This response is from Flowgroup. Please contact Geoff Barker, Business Development Director at [email address redacted]

Flowgroup is a leading UK-based technology developer and independent energy supplier employing 200 people. The company's vision is to see UK households generating their own low cost, low carbon electricity at home, replacing conventional heating system with micro combined heat and power (mCHP). Flowgroup's mCHP unit is about to launch in the UK market. The company will be launching its mCHP product as part of an innovative energy supply proposition that is capable of revolutionising the UK retail energy market by empowering consumers and reducing costs.

Flowgroup's business model has the potential to:

- ❖ Disrupt the UK retail electricity market dominated by few vertically integrated utilities by delivering great value in energy supply and related use products and empowering consumers to generate their own electricity at home;
- ❖ Offer a lower carbon alternative to conventional condensing boilers, a market currently dominated by few established players;
- ❖ Support electricity generation at the point of use and at times of winter peak demand, reducing the strain on transmission and distribution systems, deferring the need for infrastructure upgrades and displacing high carbon emitting power plants.

Flowgroup is working closely with its global manufacturing partner Jabil to achieve a low cost, sustainable mCHP product. As an early stage technology, significant capital cost reductions can be achieved at scale. A policy framework that reflects the wider value of mCHP for the energy system and allows the consumer to capture some of this value is key for the eventual success of our novel business model.

1. What changes may need to be made to the electricity market to ensure that supply and demand are balanced, whilst minimising cost to consumers, over the long-term?

MCHP is a maturing technology, currently manufactured in low volumes, which leads to a relatively high starting price with steep cost reduction potential. The technology is ideal for the development of business models that can inject enhanced competition in the entrenched boiler and electricity supply markets benefiting consumers and the energy system.

In order to access the benefits delivered by mCHP, Flowgroup recommends implementation of half-hourly settlement for customer profile classes 1-4. Half-hourly settlement would allow customers to access the full benefits of onsite electricity production by improving accuracy in the allocation of energy and network costs across suppliers. Implementation of half-hourly settlement could in turn reduce the actions that the System Operator needs to take to balance the energy system.

Flowgroup is supportive of DECC Smart Meter Programme which is considered as key enabler of a smart energy market. The rollout of smart meters for all consumers regardless of their size is set to play a key role in enabling deployment of new

demand-side technologies that could open up opportunities for local trading and for third-parties to take a more active role in flexibility markets.

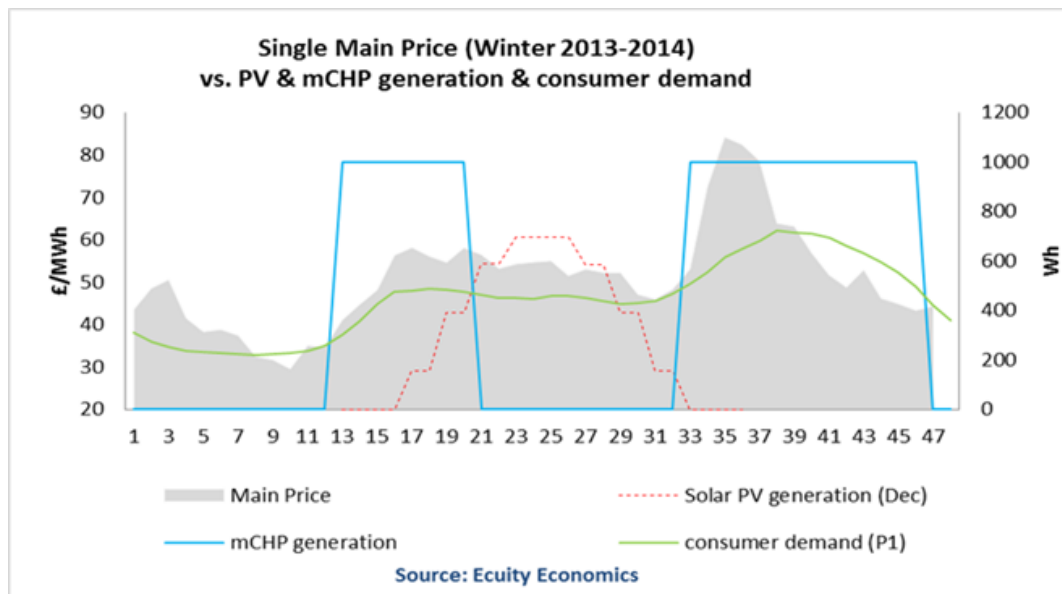


Figure 1. mCHP generation vs. System Main Price

- **What role can changes to the market framework play to incentivise this outcome**

Under current market arrangements, consumers are unable to access the full benefits of onsite electricity generation. At present, most consumers do not have meters capable of recording half-hourly consumption data and are settled using estimates of their energy usage. Introducing half-hourly settlement for profile classes 1 to 4 would result in suppliers being charged for the electricity their customers have actually consumed (as opposed to using estimates) so that changes in electricity demand will be attributed to customers making the changes and the value could be tracked.

- **Is there a need for an independent system operator (SO)? How could the incentives faced by the SO be set to minimise long-run balancing costs?**

NA – welcome views from energy business

- **Is there a need to further reform the “balancing market” and which market participants are responsible for imbalances?**

NA – welcome views from energy business

- **To what extent can demand-side management measures and embedded generation be used to increase the flexibility of the electricity system?**

Heat led mCHP, unlike other distributed technologies such as solar PV, tends to generate more power at times of peak demand (e.g. winter evenings) and so deployed in volume would reduce the need to operate, or maintain, fossil-fuelled

peaking power plants. This creates substantial economic benefits for the wider energy system from avoided capacity, energy, network and emissions costs. The electricity generated by mCHP can address a significant part of domestic needs and reduce rising consumers bills. Surplus electricity can be exported to the grid. In addition, heat-led mCHP would normally generate during winter peaks and therefore displace costly and fuel-based power generation delivering economic benefits to the wider energy system.

MCHP is also the solution that allows the most cost effective use of gas at the domestic level for heating purposes. The technology is a heating solution that is flexible in terms of fuel type utilisation; therefore renewables, in the form of renewable gas, should not be overlooked as the eventual fuel of preference for mCHP over the medium term. Renewable gas fuelled mCHP would allow the technology to become part of the portfolio of renewable heating solutions utilising existing infrastructure to attain full decarbonisation of heating by 2050.

2. What are the barriers to the deployment of energy storage capacity?

- **Are there specific market failures/barriers that prevent investment in energy storage that are not faced by other ‘balancing’ technologies? How might these be overcome?**

N/A

- **What is the most appropriate scale for future energy storage technologies in the UK? (i.e. transmission network scale, the distributed network or the domestic scale.)**

N/A

3. What level of electricity interconnection is likely to be in the best interests of consumers?

- **Is there a case for building interconnection out to a greater capacity or more rapidly than the current ‘cap and floor’ regime would allow beyond 2020? If so, why do you think the current arrangements are not sufficient to incentivise this investment?**

N/A

- **Are there specific market failures/barriers that prevent investment in electricity interconnection that are not faced by other ‘balancing’ technologies? How might these be overcome?**

N/A