

8 January 2016

National Infrastructure Commission  
1 Horse Guards Road  
London  
SW1A 2HQ**RE: National Infrastructure Commission Call for Evidence**

Open Energi welcomes the opportunity to contribute to the National Infrastructure Commission's call for evidence. As members of the Association for Decentralised Energy and in addition to contributing to the ADE response, Open Energi is responding to the energy infrastructure section of the call for evidence.

**4.1.1 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?**

The UK is a global leader in demand-side innovation and National Grid has broken ground in developing competitive markets to enable dynamic demand. Having recognised the role of demand response in helping to build a smarter, more flexible energy system while cutting costs and carbon, National Grid is aiming to meet well over 50% of its balancing needs from the demand-side by 2030. This equates to 4.5GW of demand response, an increase of 1.7GW from today. Though National Grid is responsible for both transmission and system operation, Open Energi does not encounter any immediate conflicts in these roles. Rather than replacing the system operator, the market challenge is to implement demand response at scale over the next decade.

As identified in DECC's recent report on demand response, Industrial and Commercial (I&C) load shifting is ready to deliver on carbon and security objectives at least cost while domestic DSR is yet to overcome significant technical and market barriers. I&C consumes more than double the energy of domestic users while business, waste management and industrial processes drive close to a quarter of UK CO<sub>2</sub> emissions, outweighing the contribution of the residential sector. Up to 10% of I&C energy demand can be quickly and predictably shifted without any impact on business processes or operational performance. Open Energi and other demand response providers have demonstrated the role of I&C demand response in delivering UK CO<sub>2</sub> emissions targets, reducing consumer bills by up to £790m p.a. (NERA) and increasing energy security by directly displacing peaking power stations. With the objective of facilitating the scaling of I&C demand response, market reform could add value by;

- building in longer term incentives for the system operator, beyond the 2-4 years of the balancing services incentive scheme
- attributing value to the decarbonisation achieved by implementing demand response. Open Energi has measured that for every MW of service, 2276 tonnes of CO<sub>2</sub> p.a. is saved from the electricity grid. Businesses respond to clear incentives and attributing value to this carbon would no doubt increase uptake among consumers.
- Ensuring, in principle, that balancing markets are technology neutral. With government in the short term focused heavily on the 'capacity margin', the potential of fast response demand-side management and energy storage remains nascent.

**4.1.2 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.)**

When considering the scale of energy storage it is important to bear in mind the different types of energy storage. Demand response which shifts consumption and reacts very quickly to imbalances is essentially an aggregation of small energy stores into one larger resource. For example energy can be stored in refrigeration, air conditioning, steel furnaces, bitumen tanks and water pumping into reservoirs.

With regards to the scale Open Energi believes that the distribution network or at large Industrial and Commercial businesses is the appropriate level. On the transmission network there are transmission losses to account for by the time the energy reaches the point of consumption and the battery can only be used for National Grid's purposes. On the domestic scale there are few economies of scale and reliability can be questionable for balancing. On the distribution network energy storage can be used to solve local network issues as well as for Grid; there are economies of scale to make projects feasible and there are plenty of engaged customers keen to engage with the market.

**About Open Energi**

Open Energi is a UK company headquartered in London with a satellite office in Manchester. Our globally patented dynamic demand technology provides a dynamic frequency response service which is up to five times faster than thermal power stations. We have been providing this service to National Grid since 2011, fine tuning the consumption of over three thousand electrical loads on three hundred sites across the UK in real-time. We currently have >150MW contracted and are on track to have installed 25MW by the end of 2015, delivering revenue to companies including Sainsbury's, United Utilities, Aggregate Industries, NHS and many more.

Open Energi would be happy to offer a briefing on demand response for you or your staff or to arrange a site visit so that the innovation can be seen in action. Please do not hesitate to get in touch at [chris.kimmett@openenergi.com](mailto:chris.kimmett@openenergi.com).

Yours sincerely,

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