



Greenpeace response to BEIS and Ofgem call for evidence on a smart, flexible energy system

January 2017

Greenpeace is a major international environmental pressure group with long-standing experience of campaigning and analysis to deliver a sustainable, low carbon, clean energy economy. We welcome BEIS and Ofgem's interest in seeking to make the UK energy system smarter and more flexible. Not only does this align with the direction of travel of the 21st century low carbon economy, but it is also vital to enable the UK to secure a global competitive advantage in a number of potential growth sectors. The increasingly smart and flexible energy system should accommodate higher levels of genuinely sustainable energy, and lower costs to consumers.

This submission makes 5 key points around the opportunities and requirements to promote a smarter and more flexible UK energy system:

1. Greater flexibility in the power system enables greater uptake of clean energy – thus reducing consumer bills and advancing the UK's progress in meeting its climate change commitments
2. Greater flexibility also offers significant economic advantages to the UK – specifically the possibility of developing a strong export industry
3. New market demand needs to be created where risk and reward can be located with operators, being mindful of existing interests/inertia
4. It is vital that clean energy investment is maintained simultaneously to smart grid emergence
5. Don't forget about the heat sector when designing smart grid policy

Taking each point in turn:

- 1. Greater flexibility in the power system enables greater uptake of clean energy – thus reducing consumer bills and advancing the UK's progress in meeting its climate change commitments**

In 2015 Greenpeace UK published our 2030 energy scenarios report¹, focused on a high renewable energy power system scenario. To our knowledge this is the only analysis that has demonstrated that a high renewables system can provide system security to the current standard, on the basis of matching actual hourly demand data over 11 years with the renewable resource available at each of those hours (something analysis using this same dataset indicates e.g. DECC 2050 scenarios fail to do). A critical part of the flexibility required in our scenarios report is delivered by interconnection, storage and demand response. Thus smarter grids mean a greater level of flexibility and allow for a greater penetration of clean energy onto the system.

It should be emphasised that there is some inevitability about the smart grid transition. UBS bank, HSBC, Barclays and Citigroup have all said that ownership of a solar array, battery

¹ <http://www.demandenergyequality.org/2030-energy-scenario.html>

storage and electric vehicle will become cost-effective over the next few years², creating a challenge for the remaining network to cope with in terms of shifts in demand away from the traditional way of operation. Already projects near Durham³ and in London⁴ are looking to supply solar plus storage without subsidy. As costs continue to fall such projects will become more attractive and the challenge for the grid will increase – underscoring the need for BEIS and Ofgem to be planning ahead and facilitating the transition now.

2. Greater flexibility also offers significant economic advantages to the UK – specifically the possibility of developing a strong export industry

The Government has rightly identified the potential for an innovative industrial strategy to ensure the UK takes a lead in and secures a long-term advantage in a range of highly skilled sectors within the 21st century global economy. Britain is home to a wide range of thriving potential growth sectors in the global economy - including an array of industries within the low carbon sector. Through providing the right support to enable these industries and skills bases to flourish, the UK can secure a global competitive advantage and continue to power the national economy for decades to come. These sectors are those where the UK already has a nascent competitive advantage, including an existing supply chain or transferable skills base, where there is notable international growth potential and which are compatible with the future trajectory of a zero carbon economy. The smart grid represents one such opportunity as identified in the National Infrastructure Commission's Smart Power report. The UK has a key opportunity, and is well placed to become a market leader in digital/software/interfaces - where much of the value is likely to lie. The advent of use of blockchain in energy⁵ developing local buying and selling is likely to pose a further challenge, although the UK also has experimental projects⁶ in this field, which may position it well as a global leader.

3. New market demand needs to be created where risk and reward can be located with operators, being mindful of existing interests/inertia

The advent of power flexibility is characterised by a variety of technologies, often in the digital space, evolving at significant speed with as-yet-uncharacterised opportunities, although the expectation is that these will be significant. The consultation correctly identifies that blockages need to be removed (e.g. on the way storage is treated) but fails to identify how real competition between e.g. a large new power station and local flexibility can be effected. Experience with the Capacity Market suggests this is indeed difficult. A better approach would be to mandate for distribution network operators (DNOs) a certain level of flexibility in their power supply which increases over time. DNOs would be free to choose how quickly and at what scale to implement new innovation, and whether they should act themselves, or get others to play that role. DNOs should be incentivised to get greater reward for greater flexibility. Public support may be necessary although the learnings should be publicly available – the Low Carbon Network Fund has not been very transparent about what learnings have emerged and how they can be applied elsewhere.

² <http://energydesk.greenpeace.org/2015/04/27/comment-the-solar-storage-energy-revolution-is-arriving/>

³ http://www.solarpowerportal.co.uk/news/north_star_solar_pr_to_deliver_solar_plus_storage_to_22000_homes_2612

⁴ <http://www.edie.net/news/6/London-councils-commence-solar-battery-project-and-LED-retrofit>

⁵ <https://www.newscientist.com/article/2101667-blockchain-grid-to-let-neighbours-trade-solar-power-in-australia/>

⁶ <https://www.ft.com/content/c4c03096-b7f5-11e6-ba85-95d1533d9a62>

The need to enhance flexibility and lower dependence on centralised generation/back up also raises issues of potential conflict of interest between the National Grid as system operator and as asset owner. Although the Government has recently looked at this, it seems to us that in a world of local generation and control competing with centralised dispatch arrangements, National Grid would be significantly compromised as system operator if profitability was dependent on its transmission assets usage.

Further, there is a need to do a full overhaul and review of the network charging process, such that local buying and selling of power is not unduly penalised, and to speed up the sclerotic timescale for network code revisions.

4. It is vital that clean energy investment is maintained simultaneously to smart grid emergence

Innovation will be spurred by more extensive deployment of local generation. Noting that the cleanest source of local power is almost certainly solar, it is disappointing that recent years have seen a far too rapid loss of support. No-one is arguing that support should continue for many years, or that it shouldn't be gradually tapered down – but the recent dramatic withdrawal of a series of support schemes has been very damaging to the industry's growth, and there is potentially further significant damage to the business case from an unsustainable rise in business rates hitting self-consumption solar generation sites. These policies should be reversed/stopped so that the industry has maximum certainty of its future trajectory towards becoming subsidy-free and playing a major role in a cleaner, smarter grid.

5. Don't forget about the heat sector when designing smart grid policy

Aside from solar, an important form of local generation should be combined heat and power (CHP), including district heating. Government is looking at decarbonisation of heat as part of the Emissions Reduction Plan expected to be published in the spring. At present the full potential of district heating/CHP is not being exploited because there is no effective regulatory framework for it. A full embracing of local energy flexibility and smart grid would incorporate the opportunities of heat use alongside local thermal generation, and the use of heat as a storage medium. Whilst not central to the redesign of e.g. regulations for power storage, network code revision etc., care needs to be taken that regulatory changes do not inadvertently prevent the most efficient uses of energy at a local level.