Dora Guzeleva
Head of Networks Policy: Local Grids
Sent via email to: lcnfund@ofgem.gov.uk

28th January 2013

Low Carbon Networks Fund – electricity demand

Dear Dora,

PassivSystems Ltd is pleased to offer some feedback on Ofgem's consultation on the prospective changes to the LCN fund governance, specifically the following two questions:

Question 1: Do you agree that trialling electricity demand reduction or shifting through the LCN Fund could provide DNOs with valuable learning on their role in supporting the development of a low carbon economy?

Yes, we agree.

DNOs face a difficult challenge in balancing electrical loads in the face of growing consumer demand for powering white and brown goods, future growth in loads from heat pumps and electric vehicles. The uptake of distributed PV generation is placing further constraints on networks designed for smaller, one way loads. Studies[1] have shown that a potentially cost competitive alternative to the continuing reinforcement of the low voltage network is the utilisation of demand side storage downstream of the meter.

The engagement of consumers is a particularly attractive element of home-based options downstream of the meter. The precedent for consumer investment in demand balancing equipment is Economy 7 and 10 night storage heaters, purchased in order to benefit from lower rate tariffs. Information and other enabling technologies have now moved on significantly since these poorly controlled heaters were first introduced. Now, with smart controls, load shifting may be derived from many areas within a household, such as the:

- Building infrastructure and thermal mass;
- Heat content of the central heating system;
- Domestic hot water storage;
- Certain dispatchable electrical loads within the dwelling;
- Electrical storage;
- Utilisation of centrally generated wind energy in conjunction with intelligent control of local

[1] Energy Research Partnership (2011) *The Future Role for Energy Storage in the UK*

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photovoltaic generation;
- Smarter control of heat pumps.

In addition, demand reduction which tackles the base electricity load and thus causes a net reduction at peak times or tackles large loads such as the use of resistive heating during peak times could be very valuable in reducing overall peak demand.

PassivSystems is currently working on a small project with UK Power Networks that is partially funded by the Technology Strategy Board. This project collaboration assesses the feasibility of using our innovative energy management platform to conduct in-home control with cloud services to **create aggregated demand responses from homes**. We are exploring how the DNO might in the future engage with previously passive users of their network and thus allow grid reinforcement costs to be reduced. We would welcome the opportunity to take project outcomes such as this to scale demonstration through LCN funds. Hence we are very supportive of the new proposal.

Question 2. Does the drafting proposed in annex 1 facilitate the trialling of electricity demand reduction or shifting through the LCN Fund?

In our view the proposed wording suitably covers the funding of trials by DNOs of electricity demand reduction or load shifting.

An overview of PassivSystems is appended for general information.

Dr Michael Patterson CEnv Cng MEI

R&D Director

PassivSystems - a 2013 World Economic Forum Technology Pioneer

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APPENDIX

PassivSystems - the present

Our business has headquarters in Newbury and was established in 2008: we are now one of the leading providers of Home Energy Management systems. The company is led by a seasoned management team from the energy, telecoms and service sectors and aims to help people reduce wasted energy, increase comfort and make electricity supply networks more cost-efficient. The common thread binding the team together is a track record of building solid, successful businesses.

The company was established by Colin Calder, a computing industry veteran who in 1996 was the founding shareholder of Paragon Software which rapidly became a world leader in mobile synchronization before being sold in 2000 to Phone.com (now Openwave). PassivSystems now employs over 70 people, primarily software development engineers and the customer service and operations support team.

PassivSystems has been recognised by a number of independent bodies as a leader in its field. Amongst other acknowledgements, it has been awarded as a Technology Pioneer 2013 by the World Economy Forum, twice named a Global Cleantech 100 Company, and won the prestigious Red Herring award in both European and Global categories in 2010. Its award career started early when it was one of ten companies chosen by UK Trade and Investment to represent Britain's best new technologies at the world's largest consumer electronics show, CES, held in the USA back in February 2010. PassivSystems is a well-funded company backed by Colin Calder and Wheb Ventures, a leading European Cleantech VC with assets under management of over €150 million. The company launched its first product in May 2010 and now has more than 20,000 systems deployed in UK.

The company has strong commercial and development partnerships with key strategic supply chain partners. Robust quality management procedures underpin these partnerships and all products meet the relevant UK and EU regulatory requirements.

PassivSystems' existing customer base comprises many blue-chip UK businesses including 3 of the big 6 utilities, large service and contracting companies, the two largest high street retail brands, solar funds and social landlords as well as the UK's Energy Technology Institute (ETI). PassivSystems' solar PV monitoring platform is widely recognised as best-in-class whilst its home energy management system is the most developed monitoring and control product in the market.

PassivSystems - the future

PassivSystems' ultimate ambition is to use our end to end, web connected, advanced technology platform to offer up an aggregated demand response service to the transmission and distribution grid operators, and work with energy suppliers on innovative tariff options. The concept is to combine local management of demand in the home through energy storage, with active network management at a local area level and commercial aggregation at a national level.

Our envisaged final solution would be deployed in residential homes and would utilise PassivSystems' open architecture energy management platform to create a scalable load management system which will coordinate between the grid and customer equipment to reduce

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loads or store energy as network condition dictate, supplying flexibility without impacting on the delivery of energy services for home owners. The control system will understand consumer requirements by monitoring and learning the parameters of the home and its occupants, and understanding the response capacity throughout the day.

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