Creating the right environment for demand-side response

BEAMA feedback

Summary recommendations

- Incentives for enabling technologies - use of the capacity market to fund enabling equipment for demand response;
- Industry and government need to address competing priorities in product related regulations for energy efficiency and network system related regulation for DSR;
- Domestic equipment (enabling technologies) should be light weight and fit for purpose;
- Half hourly metering for domestic customers will enable the financial benefits of DSR to be delivered to the right stakeholders;
- Automation will play a key role in ensuring the benefits from DSR can be easily accessed by customers;
- A short term priority for industry is to ensure a standard data format for communication between the meter and CAD enabled domestic appliances.

1. Introduction: BEAMA activity and capability relating to this consultation and further policy development in this area

BEAMA is the independent expert knowledge base and forum for the electrotechnical industry for the UK and across Europe. Representing over 200 manufacturing companies in the electrotechnical sector, the organisation has significant influence over UK and international political, standardisation and commercial policy.

BEAMA's Emerging Markets group, which incorporates the BEAMA Smart Housing Association, Electric Vehicle Infrastructure Project and Smart Grid Task Force, has a significant interest in demand side response (DSR) and the enabling technologies and systems for domestic, industrial and commercial customers. This is also supported by BEAMA's existing product groups, including the BEAMA Heat Pump Association and the Mandated Smart Metering Group, who feed in product specific expertise to develop solutions for future DSR markets. As equipment providers BEAMA therefore has an interest in how the DSR market will develop and how equipment functionality will need to evolve to suit the needs of the market and consumer.

BEAMA are already directly involved in a range of forums and working groups addressing this, which are also noted in this relevant Ofgem consultation. Namely, the DECC Ofgem Smart Grid Forum, WS3 and WS6, and Sustainability First's GB Electricity Demand project. BEAMAs involvement in these groups has been established to ensure equipment manufactures have input into the discussions surrounding the development of this market, specifically on the technical capabilities of different systems integral to the smart grid and provision of DSR.

BEAMA recognise that the developing market for DSR and Smart Grid will require existing and new technology platforms to:

- ✓ Incorporate DSR functionality;

- ✓ Take into consideration the application available for each technology to ensure customer service is not compromised;
- ✓ Appropriate customer advice is available to sell the benefits of DSR;
- ✓ Ensure the appropriate supply chains have design and installation capabilities.

In addition to ongoing activity, BEAMA has therefore started a program of work to review the changing energy market, including RIIO and the European regulatory and policy developments. The intention is to understand how this will affect the market for related equipment and the requirement for new systems and technologies which can be further supported in the BEAMA Emerging Market Group and other corresponding product areas.

We have adopted the following approach in reviewing existing product areas in BEAMA to improve our understand of the potential in these markets and their ability to provide both demand reduction and response on the electricity networks in the UK (ref diagram 1). We will be assessing the macro and micro view of the impact of policy on related equipment and system packages for smart housing, outlining the potential KW and CO_2 savings achievable from these technologies and their ability to provide DSR. In doing this we can asses the suitability of existing policies and regulatory frameworks which could support market development, and any potential market barrier / failure will be highlighted.

Demand Reduction and Response

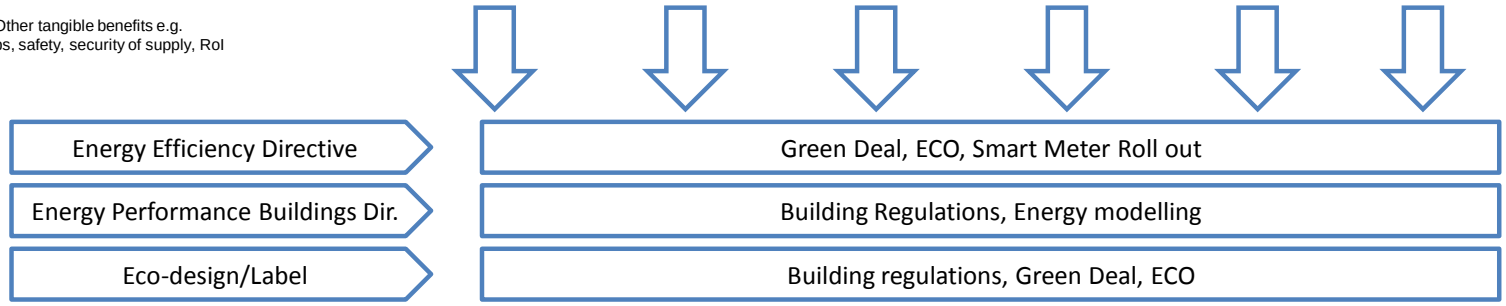
- **Focus on policy themes with multi-policy appeal**

DSR enabling technology platform will require policy support for market penetration (E.g. Green Deal, Eco Design regulations)

Technology specific | Packages

	Lighting controls	Heat Pumps	Power Factor Correction	Ventilation systems	Heating Controls	Electric heat	Electric hot water	..	Smart Housing
Macro view (UK policy impact of installing 'x' measures)[1]	kWh/CO_2	kWh/CO_2	kWh/CO_2	kWh/CO_2	kWh/CO_2	kWh/CO_2	kWh/CO_2		kWh/CO_2
Micro view (specific **policy impact** of promoting measures)	kWh/CO_2 Overall £ /customer	kWh/CO_2 Overall £/customer	kWh/CO_2 Overall £/customer	kWh/CO_2 Overall £/customer	kWh/CO_2 Overall £/customer	kWh/CO_2 Overall £/customer	kWh/CO_2 Overall £/customer		kWh/CO_2 Overall £/customer
Support work	Technical guidance/CPDs/competency work, R&D Funding sources, evaluate the cost of DSR, determine the policy and regulatory needs of a technology/system.								Interrelationships between services

1. Other tangible benefits e.g. Jobs, safety, security of supply, RoI



2. Consultation feedback

Precondition 1: Industry parties need to be confident that there is value for them in demand-side response to justify the investment.

Assessing the value of DSR is a challenge and one which should be addressed as we look to understand how customers and market players will be incentivised to participate in a DSR market.

We hope the work being initiated in BEAMA will help to contribute to this in providing consistent market information for equipment. This is especially key in evaluating whether additional incentives may be required for consumers to adopt enabling technologies for DSR (Smart grid ready appliances and controls). To understand the value of DSR to the consumer, and therefore the potential benefits that that DSR will provide, industry must review the cost of investment needed to enable this, to the customers and supply chain.

To understand the value of DSR to justify investment, the market will need to understand the capacity within domestic properties for peak avoidance. BEAMA therefore hope that planned work over the next 12 months, as outlined above, will help to clarify the ability of different low carbon technologies and domestic appliances to avoid peak, and we plan to feed this into the work ongoing within the DECC Ofgem Smart Grid Forum, WS6.

Understanding the ability of different technologies to avoid peak will be essential, in assessing the value of DSR. BEAMA support the development of the heat pump market and recognise the work ongoing to assess how heat pumps will provide DSR. However, challenges are already evident when assessing the DSR potential for these systems, and this highlights competing priorities in product related regulations for energy efficiency and network system related regulation for DSR.

A number of incentives have been implemented by government having recognised the lack of access to capital and information for energy efficiency products, namely the Green Deal and Renewable Heat Incentive. Under RHI customers are incentivised to install efficient heat pumps, which will operate at lower temperatures. It is recognised by BEAMA members that there is less potential for shifting load, unless operating a heat pump at higher temperatures for simultaneous water and heating, which would reduce the efficiency of the heat pump, and increase cost.

In addition DSR can be viewed in two key ways, which will be achievable from different technology solutions:

1. Shifting discretionary load in real time which is the suspension of service (e.g. water heating);
2. Mitigating peak in advance of an event, e.g. utilising intermittent renewable generation via an energy sink, e.g. hot water store or EV battery.

This provides a good example where not only do the technologies potentially determine the type of DSR available on the network but also the play off between efficiency incentives and the need to shift peak. BEAMA hope to focus on these challenges in the aforementioned work but also hope that this can be considered by DECC and Ofgem when consulting on the commercial and regulatory needs of the DSR market going forward.

Precondition 2: The value of demand side response services needs to be effectively signalled to customers.

In assessing the extent to which price signals can be effectively passed onto the consumer, BEAMAs interest is in the practical communication of this signal and how it can be relayed to the consumer or direct to domestic appliances.

It is recognised that in the current market the more targeted signals are typically offered to larger non-domestic customer who are better able to deal with these signals, however, we need to start enabling more opportunity for these benefits to be passed onto smaller commercial customers and the domestic market due to the significant potential in these sectors for demand response.

The effective communication of data from the meter to enabled, fit for purpose appliances and automation will play a key role in ensuring customers can respond to more sophisticated tariff structures, and dynamic DSR services. BEAMA therefore see an important role here for the technology providers to ensure fit for purpose solutions that can be installed in domestic properties and enabling technologies can be incentivised. There are a number of market challenges that will need to be overcome in ensuring this, which also relate to Precondition 3.

Precondition 3: Customers need to be aware of and able to access opportunities.

Customers need to have access to their data and market signals for DSR, and smart meters will play a key role in enabling this. Outside of the mandated smart meter program the Consumer Access Device (CAD) will allow for more advanced price signalling to appliances in the home and BEAMA therefore recognise this as a key step in ensuring customers are able to easily access opportunities for DSR.

BEAMA agree that half hourly metering for domestic customers will be preferable, to allow (financial) benefits for DSR to be delivered to the right stakeholders.

BEAMA members are already developing suitable product offerings for DSR, including the CAD, and many of these enabling technologies are already on the market. Therefore as soon as data is made available from the DCC DSR services can be enabled.

There are several levels of functionality (smart home) recognised by BEAMA, ranging from a CAD linked to one device (e.g. heating control), to full house refit, control and automation of all devices in the home, integrated into the home area network (heating, lighting, EV, PV etc). Multiple CADs must therefore be enabled for pairing with the HAN. The priority for the development of the CAD market is to ensure that the data format in the pairing of a CAD with the area network is agreed by industry. BEAMA will be working with members to inform DECC of the market potential in this area and define the data requirements for tariff signals to be communicated to products.

The technology to enable DSR and smart control in the home will therefore play a key role in providing customer access to DSR services. We therefore agree that enabling technologies and systems for DSR (including the CAD) will need to be light weight and easy to use, as well as fit for purpose.

BEAMA note the educational challenge the industry face in assisting customers to understand the changing nature of the energy system and their personal energy consumption. It is important that we are aware of all sectors of the supply chain who will play a key role in educating consumers, this includes installers and contractors who will be carrying out product replacement. Ensuring that installers are carrying a consistent message on DSR along with the DNO, SO and TO will be very important, as well as making sure they are promoting fit for purpose smart housing systems (CAD enabled).

Ofgem recognise the challenge related to access to capital to invest in home automation and the product packages that will enable access to DSR services. It may therefore be necessary to develop customer incentivises linked to DSR services for enabling technologies. As previously mentioned if these are to tie into a multi policy approach and exist along side other incentives focused on energy efficiency, industry and government will need to be sure that any conflicting interests and ironed out. BEAMA hope that the planned work outlined at the front of this paper will go some way to assist in assessing these policy and regulatory needs.

BEAMA would recommend the use of the capacity market (payments or assurances of payments through capacity) to pay for enabling equipment for DSR. This would ensure the equipment is available on the networks to maximise the benefits from demand response.

BEAMA are happy to provide any further clarification on the points outlined in this paper. Please contact BEAMA Smart Grid Co-ordinator Yselkla Farmer for any questions related to this paper: yselklaf@beama.org.uk.